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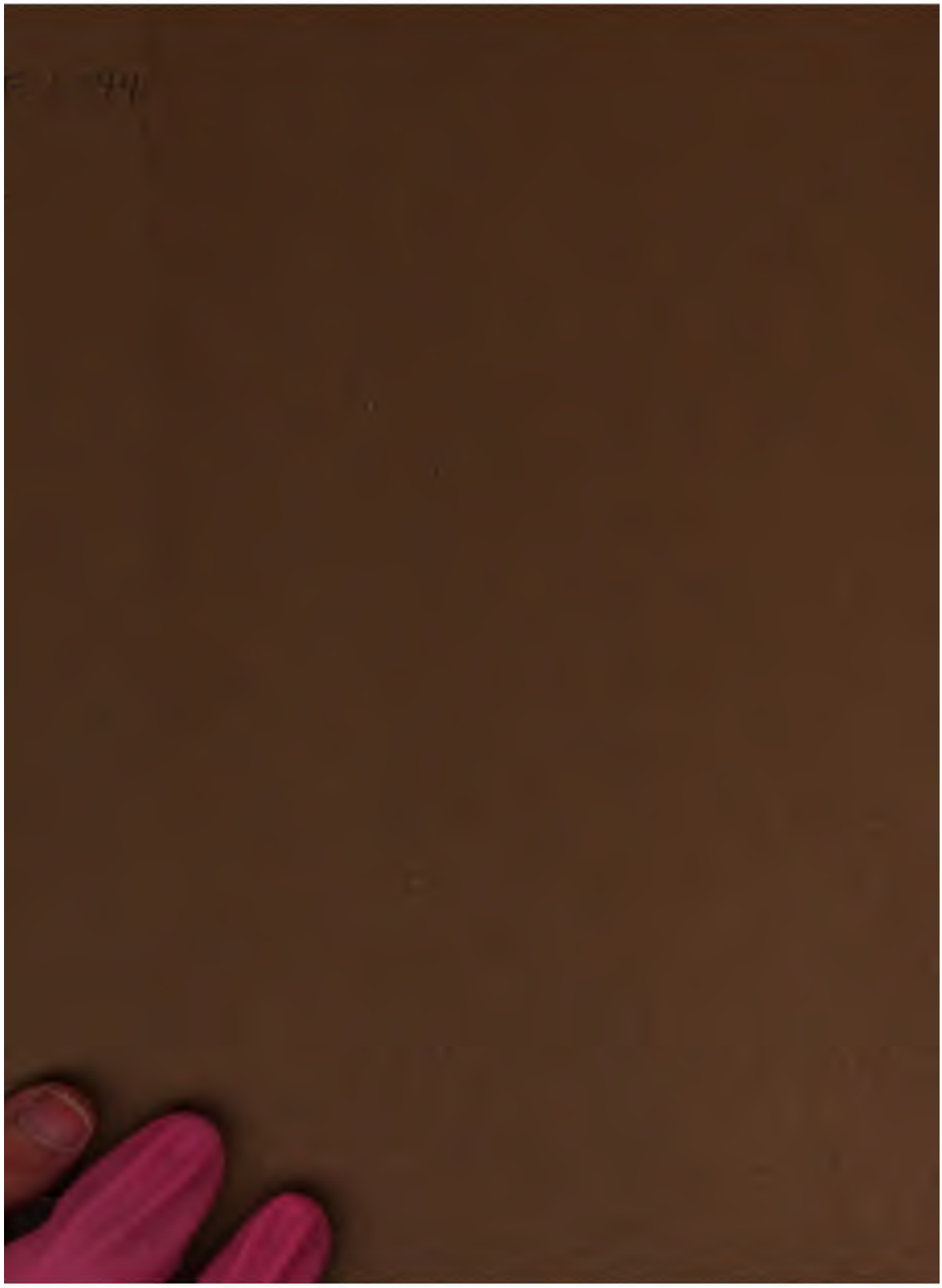

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Editor-in-Chief

CHARLES MORRIS

Litterateur, Historian and Encyclopedist

Author of "Civilization, an Historical Review of Its Element," "The Aryan Race," "Manual of Classical Literature," "Man and His Ancestors," "Famous Men and Great Events of the Nineteenth Century," and numerous other works. Editor of "Twentieth Century Encyclopedia," "Biographical Dictionary," "Famous Orators of the World," "Half Hours with the Best American Authors," etc., etc. Member of the "Academy of Natural Sciences of Philadelphia," "Geographical Society of Philadelphia," "Natural History Society," and "Society for Physical Research."

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THE JOHN C. WINSTON COMPANY

CHICAGO PHILADELPHIA TORONTO

KF2344

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KEY TO PRONUNCIATION

Three methods are used to indicate the pronunciation of the words forming the headings of the separate articles:

(1) By dividing the word into syllables, and indicating the syllable or syllables to be accented. This method is followed where the pronunciation is entirely obvious. Where accent marks (') are omitted, the omission indicates that all syllables are given substantially the same value.

(2) Where the pronunciation differs from the spelling, the word is re-spelled phonetically, in addition to the accentuation.

(3) Where the sound values of the vowels are not sufficiently indicated merely by an attempt at phonetic spelling, the following system of diacritical marks is additionally employed to approximate the proper sounds as closely as may be done:

ā, as in *fate*, or in *bare*.
ä, as in *alms*, Fr. *âme*, Ger. *Bahn*=â of Indian names.
å, the same sound short or medium, as in Fr. *bal*, Ger. *Mann*.
a, as in *fat*.
ą, as in *fall*.
a, obscure, as in *rural*, similar to *u* in *but*, *e* in *her*: common in Indian names.
ē, as in *me*=*i* in *machine*.
e, as in *met*.
ė, as in *her*.
ī, as in *pine*, or as *ei* in Ger. *Mein*.
i, as in *pin*, also used for the short sound corresponding to ē, as in French and Italian words.
eu, a long sound as in Fr. *jeûne*, = Ger. long *ö*, as in *Söhne*, *Göthe* (Goethe).
eu, corresponding sound short or medium, as in Fr. *peu*=Ger. *ö* short.
ō, as in *note*, *moan*.
o, as in *not*, *frog*—that is, short or medium.
ŏ, as in *move*, *two*.
ū, as in *tube*.
u, as in *tub*: similar to *e* and also to *a*.
u, as in *bull*.
ü, as in Sc *abune*=Fr. *û* as in *dû*, Ger. *ü* long as in *grün*, *Bühne*.
ŭ, the corresponding short or medium sound, as in Fr. *but*, Ger. *Müller*.
oi, as in *oil*.
ou, as in *pound*; or as *au* in Ger. *Haus*.

The consonants, b, d, f, h, j, k, l, m, n, ng, p, sh, t, v, and z, when printed in Roman type, are always given their common English values in the transliteration of foreign words. The letter c is indicated by s or k, as the case may be. For the remaining consonant sounds the following symbols are employed:

ch is always as in *rich*.
đ, nearly as *th* in *this* = Sp. *d* in *Madrid*, etc.
g is always hard, as in *go*.
ĥ represents the guttural in Scotch *loch*, Ger. *nach*, also other similar gutturals.
ņ, Fr. nasal *n* as in *bon*.
r represents both English *r*, and *r* in foreign words, in which it is generally much more strongly trilled.
s, always as in *so*.
th, as *th* in *thin*.
th, as *th* in *this*.
w always consonantal, as in *we*.
x = ks, which are used instead.
y always consonantal, as in *yea* (Fr. *ligne* would be re-written lēny).
zh, as *s* in *pleasure* = Fr. *j*.

WINSTON'S CUMULATIVE LOOSE-LEAF ENCYCLOPEDIA

VOLUME III

Chalcondylas (kal-kon'di-las), DEMETRIUS, a Greek grammarian, born at Athens about 1424. On the taking of Constantinople by the Turks he came to Italy, was invited to Florence by Lorenzo de' Medici about 1479, and afterwards by Ludovico Sforza to Milan, where he died in 1510 or 1511. He did much to further the study of the Greek language and literature in the west of Europe.

Chaldæa (kal-dē'a), in ancient geography, the southerly part of Babylonia, or in a wider sense corresponding to Babylonia itself. The name was of comparatively late origin, the old titles of the country being Accad and Shumer. The name Chaldæans was eventually applied to a portion of the Babylonian Magi, who were devoted to the pursuit of astronomy and magical science. See *Babylonia*.

Chaldee Language (kal'-dē), a name often given to the Aramean language (or a dialect of it), one of the principal varieties of the ancient Semitic. Chaldee literature is usually arranged in two divisions: the Biblical Chaldee, or those portions of the Old Testament which are written in Chaldee, namely, Daniel, from ii, 4, to vii, 28; Ezra, iv, 8, to vi, 18; and vii, 12–26; and Jeremiah, x, 11; and the Chaldee of the Targums and other later Jewish writings. See *Aramaic*.

Chaldron (chal'dron), an old English measure of 36 bushels; also a U. S. measure, 26¼ hundredweight.

Chaleur Bay (sha-lėr'), an inlet of the Gulf of St. Lawrence, between Quebec and New Brunswick. The French fleet was here defeated by the British in 1760.

Chalice (chal'is), a term generally applied to a communion cup for the wine in the Eucharist, often of artistic and highly ornamental character.

Chalk (chąk), a well-known earthy limestone, of a white color, soft, and admitting no polish. It is an impure carbonate of lime, and is used as an absorbent and antacid, and for making marks.—*Black chalk* is a soft variety of argillaceous slate. (See *Black Chalk*.) —*Brown chalk*, a familiar name for umber.—*Red chalk*, another name for ruddle.—*French chalk*, steatite, soapstone, or talc, a soft magnesian mineral. See *Cretaceous*.

Challenge (chal'enj), to jurors, is an objection either to one or all of the jurors. See *Jury*.

Challis (shal'i), an elegant dress fabric of silk and worsted introduced at Norwich in 1832, soft and pliable and with a clothy surface.

Chalmers (chą'mėrz, chal'merz), ALEXANDER, a British journalist, editor, and miscellaneous writer, born at Aberdeen in 1759, where his father, the founder of the first Aberdeen newspaper, was a printer. About 1777 Chalmers came to London, was employed as journalist, and edited the *British Essayist*, from the *Tatler* to the *Observer*, published 1803. He also issued an edition of Shakespere, with notes, in 1809; and the works of the English Poets from Chaucer to Cowper, with Johnson's *Lives*, and additional *Lives* in 1810. His most extensive work was the *General Biographical Dictionary*, thirty-two vols., 1812–17. He died in London in 1834.

Chalmers, GEORGE, a Scotch antiquary born in 1742, studied law at Edinburgh, and removed to America, where he practised for upwards of ten years. On his return he was appointed in 1786 clerk to the Board of Trade, an office held by him till his death in 1825. He published various political and statistical works, lives of Daniel Defoe and Thomas Ruddiman, and edited the works of Ramsay and Lindsay; but his chief work was his *Caledonia*, a laborious historical and topographical account of North Britain from the most ancient to recent times.

Chalmers, GEORGE PAUL (1833-78), a Scottish painter, born at Montrose. He studied painting at the Trustees School in Edinburgh under Scott Lauder and produced a number of portraits that won high praise; it was, however, as a landscape painter that he excelled. His *Favorite Air* attracted attention as early as 1854. *The End of the Harvest*, which he painted in 1873, is one of his best examples of landscape painting. Of hardly less merit is *Rain in Slichagan*, executed in 1878. Among other works of his that deserve mention are *Running Water*, *The Prayer*, and *The Legend*, the latter his last painting and one of his most beautiful. *The Legend* is now in the National Gallery at Edinburgh. He became an associate member of the Royal Scottish Academy in 1867 and a full member of the academy in 1871.

Chalmers, THOMAS, an eminent Scottish divine, born in 1780, at Anstruther Easter, Fife. He studied at the University of St. Andrews, and was licensed as a preacher in 1799, afterwards becoming assistant to the professor of mathematics at St. Andrews. In 1803 he was presented to the parish of Kilmany, in Fife, where he made a high reputation as a preacher. In 1808 he published an *Inquiry into the Extent and Stability of National Resources*. In 1813 his article on Christianity appeared in the *Edinburgh Encyclopædia*, and shortly afterwards his review of Cuvier's *Theory of the Earth*, in the *Christian Instructor*. His fame as a preacher had by this time extended itself throughout Scotland, and in 1815 he was inducted to the Tron Church of Glasgow. His astronomical discourses delivered there in the following winter produced a sensation not only in the city but throughout the country, 20,000 copies selling in the first year of their publication. In 1819 he was transferred from the Tron to St. John's, a church built and endowed expressly for him by the Town Council of Glasgow, but his health having been tried by overwork he accepted, in 1823, the chair of moral philosophy at St. Andrews. In 1827 he was elected to the divinity chair in the University of Edinburgh, an appointment which he continued to hold till the Disruption from the Scottish church in 1843. In 1832 he published his *Political Economy*, and shortly afterwards his Bridgewater Treatise *On the Adaptation of External Nature to the Moral and Intellectual Constitution of Man*. During this period he was occupied with the subject of church extension on the voluntary principle, but it was in the great non-intrusion movement in the Scottish church that his name became most prominent. Throughout the whole contest to the Disruption in 1843 he acted as the leader of the party that then separated from the establishment, and may be regarded as the founder of the Free Church of Scotland, of the first assembly of which he was moderator. Having vacated his professorial chair in the Edinburgh University, he was appointed principal and primarius professor of divinity in the new college of the Free Church. He died May 30, 1847.

Châlon-sur-Saône (shä-lôn-sür-sôn), a town of France, dep. Saône-et-Loire, on the right bank of the Saône, which here becomes navigable for steamboats, and at the commencement of the Canal du Centre. It has a cathedral of the 13th century, a fine river quay, an exchange, communal college, etc. There are foundries, dyeworks, etc., and a flourishing trade. Pop. 26,538.

Châlons-sur-Marne (shä-lôn-sür-marn), a city of France, capital of the department Marne (Champagne), on the right bank of the river Marne. The principal public buildings are the cathedral, a fine edifice in the Gothic style; three other interesting Gothic churches; the Hôtel de Ville, built in 1772; the Hôtel de la Préfecture, built in 1764, one of the finest buildings of the kind in France. There are manufactures of woolen and cotton goods; also cotton mills, tanneries, etc. In 451 Attila was defeated before the walls of Châlons, and from the 10th century it flourished as an independent state under counts-bishops, having about 60,000 inhabitants. After being united to the French crown in 1360, it declined. A celebrated camp was established by Napoleon III about 18 miles from Châlons for the purpose of training the French troops, still to some extent employed. Pop. 21,487.

Chalybeate Waters (ka-lib'ē-āt), waters holding iron in solution, either as a carbonate or as a sulphate with or without other salts. All waters containing iron are distinguished by their styptic, inky taste, and by giving a more or less deep color with an infusion of tea or of nutgalls.

Chalybite (kal'i-bīt), an ore of iron, a native anhydrous metacarbonate ($FeCO_3$), existing abundantly under the name of *spathic* or *sparry ore*, or *siderite*. A siliceous or argillaceous variety called clay ironstone, occurring in the coal-measures, is one of the most

abundant and valuable ores of iron. Combined with carbonaceous matter it forms the black-band ironstone.

Chama (kā'ma), the gaping cockle, a genus of large marine bivalves. The giant clam, *Chama gigas*, is the largest shell yet discovered, sometimes measuring four feet across. It is found in the Indian Ocean.

Chamade (sha-mād'), a military term for the beat of a drum or sound of a trumpet inviting an enemy to parley.

Chamærops (ka-mē'rops), a genus of palms belonging to the northern hemisphere, and consisting of dwarf trees with fan-shaped leaves born on prickly petioles, and a small berry-like fruit with one seed. The *C. humilis* is the only native European palm. It does not grow farther north than Nice. The fibers of its leaves form an article of commerce under the name of *crin végétal* (vegetable hair). Brazilian grass is a fiber obtained from the *Chamærops argentea*. A Chinese species, *C. Fortunei*, is quite hardy in the south of England.

Chamalari (cham-a-lä'rē), CHAMALHARI, a peak of the Himálaya Mountains, at the western extremity of the boundary line between Bhutan and Tibet. Height, 23,929 feet.

Chamber (chām'bėr), a word used in many countries to designate a branch of government whose members assemble in a common apartment, as the *chamber* of deputies in France, or applied to bodies of various kinds meeting for various purposes. The *imperial chamber* (in German, *Reichskammergericht*) of the old German Empire was a court established at Wetzlar, near the Rhine, by Maximilian I in 1495, to adjust the disputes between the different independent members of the German Empire, and also such as arose between them and the emperor.—*Chambers of commerce* are associations of the mercantile men of towns for the purpose of protecting and furthering the interests of the commercial community.

Chamberlain (chām'bėr-lin), an officer charged with the direction and management of the private apartments of a monarch or nobleman. The *lord-chamberlain* or *lord-great-chamberlain* of Great Britain is the sixth officer of the crown. His functions, always important, have varied in different reigns. Among them are the dressing and attending on the king at his coronation; the care of the palace of Westminster (Houses of Parliament); and attending upon peers at their creation, etc. The office of *lord-chamberlain of the household* is quite distinct from that of the great-chamberlain, and is changed with the administration. This officer has the control of all parts of the household (except the ladies of the queen's bedchamber) which are not under the direction of the lord-steward, the groom of the stole, or a master of the horse. The king's (queen's) chaplains, physicians, surgeons, etc., as well as the royal tradesmen, are by his appointment; the companies of actors at the royal theaters are under his regulation; and he is also the licenser of plays.

Chamberlain, JOSEPH, an English statesman, born in London in 1836, and educated at London University school. He became a member of a firm of screw-makers at Birmingham, but gave up active connection with the business in 1874. He early became prominent in Birmingham both in connection with civic and political affairs, being an advanced radical and an able speaker, was chairman of the school-board, and thrice in succession mayor of the city (1874–76). In 1876 he entered parliament as a representative of Birmingham, and at the general election of 1880 he was chosen for the same city along with Mr. Bright and Mr. Munts. Under Mr. Gladstone's premiership he now became president of the Board of Trade, and a cabinet-minister, and was able to pass the Bankruptcy Act now in force, though he failed with his merchant shipping bill. In the Gladstone government of 1886 he was president of the Local Government Board; but his leader's Irish policy caused him to resign, and since then, as member for West Birmingham, he has been an active member of the Liberal-Unionist party. He was Colonial Secretary under Salisbury and Balfour, 1895–1905, and as such had much to do with bringing on the war in South Africa. His later advocacy of a protective tariff brought on a schism in the Unionist party which led to the resignation of the ministry in December, 1905, followed by an overwhelming Liberal triumph in the general elections of 1906. He died July 3, 1914.

Chamberlain, JOSHUA LAWRENCE, born at Brewer, Maine, in 1828; entered the army in 1862, was promoted brigadier-general on the battlefield by General Grant in 1864, and made brevet major-general in 1865. He was governor of Maine 1866–71, and President of Bowdoin College 1871–83. He wrote, *Maine: Her Place in History; Sovereignty and Sacrifice; American Ideals*, etc. Died, 1914.

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CHICAGO PHILADELPHIA TORONTO

mountains in Europe and Western Asia. Its horns, which are about 6 or 7 inches long, are round, almost smooth, perpendicular and straight until near the tip, where they suddenly terminate in a hook directed backwards and downwards. Its hair is brown in winter, brown fawn

Chamois (*Antilope rupicapra*).

color in summer, and grayish in spring. The head is of a pale yellow color with a black band from the nose to the ears and surrounding the eyes. The tail is black. Its agility, the nature of its haunts, and its powers of smell render its pursuit an exceedingly difficult and hazardous occupation.

Chamomile, or CAMOMILE (kam'o-mil; *Anthĕmis nobilis*), a well-known plant belonging to the natural order Compositæ. It is perennial, and has slender, trailing, hairy, and branched stems. The flower is white, with a yellow center. Both leaves and flowers are bitter and aromatic. The fragrance is due to the presence of an essential oil, called oil of chamomile, of a light blue color when first extracted, and used in the preparation of certain medicines. Both the leaves and the flowers are employed in fomentations and poultices, and also in the form of an infusion as a stimulant stomachic. It is cultivated in gardens in the United States, and also found wild.—Wild chamomile (*Matricaria chamomilla*) is now out of use in England; but its medicinal properties resemble those of common chamomile, and it is still used in some parts of Europe.

Chamond (shă-mōn), ST., a manufacturing town of France, department Loire, on the railway from St. Étienne to Lyons. It is well built, has an old castle and a handsome parish church; and has silk factories, large iron-foundries, dye-works, etc. Pop. 15,469.

Chamouni (shă-mō-nē), or CHAMONIX (shă-mo-nē), a celebrated valley in France, department Haute-Savoie, in the Pennine Alps, over 3000 feet above sea-level. It is about 12 miles long, by 1 to 6 miles broad, its E. side formed by Mont Blanc and other lofty mountains of the same range, and it is traversed by the Arve. The mountains on the E. side are always snow-clad, and from these proceed numerous glaciers, such as the Glacier de Bossons and the Mer de Glace. The village of Chamouni (pop. 806) is much frequented by tourists, and is one of the points from which they visit Mont Blanc. There is a statue in the village to Saussure who first ascended the peak (1786).

Champagne (shan-pân-y', or sham-pān'), an ancient province of France, which before the revolution formed one of the twelve great military governments of the kingdom. It forms at present the departments of Marne, Haute-Marne, Aube, Ardennes, and part of those of Yonne, Aisne, Seine-et-Marne, and Meuse. Troyes was the capital.

Champagne (sham-pān'), a French wine, white or red, which is made chiefly in the department of Marne, in the former province Champagne, and is generally characterized by the property of creaming, frothing, or effervescing when poured from the bottle, though there are also *still* Champagne wines. The creaming or slightly sparkling Champagne wines are more highly valued by connoisseurs, and fetch greater prices than the full-frothing wines, in which the small quantity of alcohol they contain escapes from the froth as it rises to the surface, carrying with it the aroma and leaving the liquor nearly vapid. The property of creaming or frothing possessed by these wines is due to the fact that they are partly fermented in the bottle, carbonic acid being thereby produced. Wine of a similar kind can of course be made elsewhere, and some of the German champagnes are hardly to be distinguished from the French. Much artificial or imitation champagne is sold.

Champaign, a city of Champaign Co., Illinois, 128 miles s. w. of Chicago. It is the seat of the University of Illinois and has manufactures of mill products, auto tools, sectional house, knit goods, electrical fixtures, locomotive cranes, etc. Pop. (1910) 12,421; (1920) 15,873.

Champerty (sham'per-ti), or CHAMPARTY, in *law*, is a bargain with the plaintiff or defendant in any suit to have part of the land, debt, or other thing sued for, if the party that undertakes it prevails therein, the champertor meanwhile furnishing means to carry on the suit. Such bargains are illegal.

Champ-de-Mars (shäṅ-dė-märs), that is, Field of Mars, an extensive piece of ground in Paris, formerly used as a place of military exercise. It was here that Louis XVI swore to defend the new constitution of 1790, and it was the site of various expositions. Here is the Eiffel Tower. See *Paris.*

Champignon (sham-pin'yon), a name given to the common mushroom (*Agaricus compestris*).

Champlain (sham-plān'), LAKE, a lake chiefly in the United States, between the states of New York and Vermont, but having the north end of it in Canada; length, about 120 miles; breadth, from a half mile to 15 miles. It is connected with the Hudson by canal, and has for outlet the Richelieu or Sorrel river, into the St. Lawrence. The scenery is beautiful and attracts many visitors. It was discovered by Samuel Champlain (q. v.) in 1609. The possession of the lake was a matter of importance in the war of 1812-15, and Sir George Prevost's attempted invasion of New York was defeated here in a naval battle by the Americans in 1814. The American squadron was under the command of Captain Macdonough; Captain Downie commanded the British flotilla. The rout of the land forces succeeded the naval battle.

Champlain (shäṅ-plaṅ), SAMUEL, a French naval officer and maritime explorer, the founder of Quebec, was born about 1570; died 1635. His exploits in the maritime war against Spain in 1595 attracted the attention of Henry IV, who commissioned him in 1603 to found establishments in North America. He made three voyages for that purpose, in the last of which he founded Quebec, and was in 1620 appointed Governor of Canada. He did much to foster the fur trade and explore the region of the Great Lakes, and he proved an able administrator, but his conflicts with the Iroquois Indians roused a bitter enmity in that confederacy from which Canada long suffered.

Champollion (shäṅ-pol-yōṅ), JEAN FRANÇOIS, a French scholar, celebrated for his discoveries in the department of Egyptian hieroglyphics, born at Figeac, department of Lot, in 1790. At an early age he devoted himself to the study of Hebrew, Arabic, Coptic, etc., and in 1809 became professor of history at Grenoble. He soon, however, retired to Paris, where, with the aid of the trilingual inscription of the Rosetta Stone and the suggestions thrown out by Dr. Thomas Young, he at length discovered the key to the graphic system of the Egyptians, the three elements of which—figurative, ideographic, and alphabetic—he expounded before the Institute in a series of memoirs in 1823. These were published in 1824 at the expense of the state, under the title of *Précis du Système Hiéroglyphique des Anciens Egyptiens.* In 1826 Charles X appointed him to superintend the department of Egyptian antiquities in the Louvre; in 1828 he went as director of a scientific expedition to Egypt; and in 1831 the chair of Egyptian archæology was created for him in the Collège de France. He died at Paris in 1832. Other works are his *Grammaire Egyptien, and Dictionnaire Hiéroglyphique.*

Champollion-Figeac (shäṅ-pol-yōṅ-fē-zhăk), JACQUES JOSEPH, the elder brother of the preceding, born at Figeac in 1778, died in 1867. His principal works are: *Antiquités de Grenoble,* 1807; *Paléographie Universelle; Annales des Lagides,* 1819; *Traité élémentaire d'Archéologie,* 1843; *Écriture démotique Égyptienne,* 1843; *L'Égypte Ancienne,* 1850.

Chance. See *Probability.*

Chancel (chan'sel) is that part of the choir of a church between the altar or communion-table and the rail that encloses it.

Chancellor (chan'sel-or), a high official in many of the kingdoms of Europe, the office including in its duties the supervision of charters and other official writings of the crown requiring solemn authentication. The title and office are also ecclesiastical, and hence each bishop still has his chancellor, the principal judge of his consistory. In the new German empire, the chancellor (Reichskanzler) is president of the Federal Council, and has the general conduct of the imperial administration In the United States, a chancellor is the

judge of a court of chancery or equity established by statute.

The *Lord High-chancellor* of Great Britain and Ireland (originally of England), who is also Keeper of the Great Seal, is the first judicial officer of the crown, and exercises an extensive jurisdiction as head of the Supreme Court of Judicature. He ranks as first lay person of the state after the blood-royal. He is a cabinet minister and a privy-councilor in virtue of his office, is prolocutor of the House of Lords by prescription, and vacates his office with the ministry which appoints him. There is also a Lord Chancellor of Ireland, who is the head of the judicial bench. He is not a member of the British ministry. The chancellorship of Scotland was abolished at the union.

The *Chancellor of the Exchequer* is the principal finance minister of the British government, and as all questions of supply originate in the House of Commons, a peer cannot be conveniently appointed to this office. It is sometimes held along with that of first lord of the treasury.

Chancellor of a university, the highest honorary official in the university, from whom the degrees are regarded as proceeding. The post in Britain is usually occupied by a person of rank.

Chancellorsville (chan'sel-ors-vil), the site of one of the greatest battles of the American Civil war, in which, on the 2d, 3d, and 4th of May, 1863, a victory was gained by the Confederates under Generals Lee and Jackson over the Federal troops commanded by General Hooker. Both armies lost heavily in the battle, the Confederates suffering severely in the loss of their brilliant leader Jackson.

Chancery (chan'se-ri), formerly the highest court of justice in England next to Parliament, but since 1873 a division of the High Court of Justice, which is itself one of the two departments of the Supreme Court of Judicature (which see). Formerly it embraced six superior courts called high courts of chancery, viz.: the court of the lord high-chancellor, the court of the master of the rolls, the court of appeal in chancery, and the courts of the three vice-chancellors, with various inferior courts. The jurisdiction of the court was both ordinary and extraordinary, the former as a court of common law, the latter a court of equity. The extraordinary court, or court of equity, proceeded upon rules of equity and conscience, moderating the rigor of the common law, and giving relief in cases where there was no remedy in the common law courts. The Chancery Division now consists of the lord-chancellor as president and five justices. In American law a court of general equity jurisdiction. Separate courts of chancery or equity exist in some of the States; in others the courts of law sit also as courts of equity; in others the distinction between law and equity has been abolished or never existed.

Chanda (chän-dä'), a town of India, Central Provinces, surrounded by a wall 5½ miles long, with manufactures and a considerable trade. Pop. about 17,000. It is the capital of a district of the same name.

Chandausi (chan-dou-sē'), a town of India, N. W. Provinces, Moradabad district. Pop. about 30,000.

Chanderi (chan-dā'rē), or CHANDHAIREE, a town in Central India, Scindia's Dominions, in a hilly and jungly tract, 103 miles S. of Gwalior, formerly of considerable extent and splendor, but now an insignificant place. There is a fort which figured much in the wars of the Mogul dynasty.

Chandernagore (chun'der-nug'er), or CHAN'DARNAGAR ('city of sandalwood'), a town in Hindustan, belonging to France, on the right bank of the Hooghly, 16 miles N. N. W. of Calcutta. The French established a formal cession of it, together with its territory of 2325 square acres, from Aurungzebe. It was three times occupied by the British, but was finally restored to the French in 1816. Pop. of town and territory, 25,000.

Chandpur (chänd'pur), a town of India, Bijnaur district, N. W. Provinces; thriving, well paved and drained. Pop. about 12,000.

Chang-Chow (chäng' chou), one of the largest cities of China, in the province of Fokien, 36 miles W. by S. of Amoy, its port. It has an active trade. Pop. est. 1,000,000.

Chang-Chow, a city of China in Kiang-Su province, E. by S. of Nanking. Pop. 360,000.

Chang-Sha, a city of China, capital of Hunan province, on the Heng-Hiang. Pop. 250,000.

Chank-shell, the common conch-shell (*Turbinella pyrum*), of a spiral form, worn as an ornament by the Hindu women. A shell with its spires or whorls turning to the right is held in peculiar estimation and fetches a high price. The chank is one of the gasteropodous mollusca.

Channel Islands (chan'el), a group of islands in the

English Channel, off the W. coast of department La Manche, in France. They belong to Britain, and consist of Jersey, Guernsey, Alderney, and Sark, with some dependent islets. They are almost exempt from taxation, and their inhabitants enjoy besides all the privileges of British subjects. The government is in the hands of bodies called the "states," some members of which are named by the crown, while others are chosen by the people, and others sit *ex officio*. The islands have been fortified at great expense. They form the only remains of the Norman provinces once subject to England. Area 75 sq. miles, pop. (1911) 96,900. See the separate articles.

Channels, or CHAIN-WALES, of a ship, broad and thick planks projecting horizontally from the ship's outside, abreast of the masts. They are meant to keep the shrouds clear of the gunwale.

Channing (chan'ing), WILLIAM ELLERY, an Unitarian divine and writer, born at Newport, Rhode Island, in 1780. He studied at Harvard College, became a decided Unitarian, and propagated Unitarian tenets with great zeal and success. His first appointment as a pastor was in 1803, when he obtained the charge of a congregation in Boston, and before long he became known as one of the most popular preachers of America. His reputation was still further increased by the publication of writings, chiefly sermons, reviews etc., on popular subjects. He died at Burlington, Vermont, in 1842.—His nephew, WILLIAM HENRY CHANNING, born 1810, also a Unitarian preacher (for some time at Liverpool) and supporter of the socialistic movement, wrote a memoir of his uncle and other works. Died in 1884.

Chant, a short musical composition consisting generally of a long reciting note, on which an indefinite number of words may be intoned, and a melodic phrase or cadence. A single chant consists of two strains, the first of three and the second of four bars in length. A double chant has the length of two single ones.

Chanterelle (shan-tèr-el'), a British edible mushroom (*Cantharellus cibarius*) of a bright orange color, with a pleasant fruity smell.

Chantilly (shăn-tē-yē), a town of France, department of the Oise, 25 miles N. N. E. of Paris, celebrated for a variety of lace made here and in the neighborhood; for the splendid château, built by the great Condé, in great part leveled by the mob at the revolution, but rebuilt by the Duc d'Aumale after the estate came into his possession in 1850. Along with its fine domain and its splendid art collection it was presented by the duke to the French Institute in 1887. Chantilly is a horse-racing center. Pop. 4632.

Chantrey (chan'tri), SIR FRANCIS, an English sculptor, born in 1781 near Sheffield, was the son of a well-to-do carpenter. Even in boyhood his chief amusement was in drawing and modeling figures, and he was apprenticed in 1797 to a carver and gilder. In 1802 he commenced work for himself at Sheffield by taking portraits in crayons. After studying at the Royal Academy in London he eventually settled in the metropolis, where he presented numerous busts at the exhibitions of the Royal Academy. This was the commencement of his career of fame and fortune, and he soon came to be regarded as the first monumental sculptor of his time. In 1816 he was chosen an associate and in 1818 a member of the Royal Academy. He was knighted in 1835, and died in 1842. His most celebrated works are the *Sleeping Children*, in Lichfield Cathedral; the statue of Lady Louisa Russell, in Woburn Abbey; and statues of Pitt, Wallington and others in London.

Chantry (chan'tri), an endowment to provide for the singing of masses; also the chapel where the masses are chanted. Chapels were frequently endowed by men who wished to have masses for the repose of their souls.

Chanute (chà-nöt'), a city of Neosho Co., Kansas, 126 miles S. S. W of Kansas City, Missouri, surrounded by about 2000 oil and gas wells. Here are the headquarters and car shops of the Southern Division of the Santa Fe R. R., with 1150 employees. It has refineries, planing mill, and manufactures of cement, brick, gas mantels, milling machines, etc. Pop. (1920) 10,286.

Chao-Chow (chà'o chà'ou), a city of China, province Quangtung, on the river Han, 195 miles N. E. of Hong-Kong, the center of an important maritime division of the province. Pop. est. at 200,000.

Chaos (kā'os), in old theories of the earth, the void out of which sprang all things or in which they existed in a confused, unformed shape before they were separated into kinds.

Chapel (chap'el), a term applied to buildings of various kinds erected for some sort of religious service. Thus it may mean a subordinate place of worship attached to a large church,

and especially to a cathedral, separately dedicated and devoted to special services. (*See Cathedral.*) Or it may mean a building subsidiary to a parish church and intended to accommodate persons residing at a distance from the latter; or a place of worship connected with a palace, castle, university, etc.

Chaplain (chap'lin), literally a person who is appointed to a chapel, as a clergyman not having a parish or similar charge, but connected with a court, the household of a nobleman, an army, a prison, a ship, or the like. Chaplains in the United States service have the assimilated rank of captain. They receive a yearly pay of $1500.

Chaplet (chap'let), a string of beads used by Roman Catholics to count the number of their prayers. In heraldry it means a garland of leaves, with four flowers among them at equal distances; in architecture, a small molding carved into beads, pearls, etc.

Chapman (chap'man), in general a merchant or trader, but in modern times more specifically a hawker or one who has a traveling booth.

Chapman, GEORGE, an English poet, the earliest, and perhaps the best, translator of Homer, was born in 1557, and died in 1634. He was educated at Oxford, and in 1576 proceeded to London; but little is known of his personal history.

Chapman, J. WILBUR (1859-1918), an American clergyman and evangelist, born at Richmond, Ind. He graduated from Lane Theological Seminary in 1882 and was pastor of the First Reformed Church, Albany, 1884-90. For three years he was pastor of the Bethany Presbyterian Church, Philadelphia; and after a notable evangelistic campaign, during which he visited various parts of the country, he returned to the Bethany Church in 1896. He was pastor of the Fourth Avenue Presbyterian Church, New York, 1900-05, after which he was representative-at-large for the Evangelistic Committee of the Presbyterian Church.

Chapoo (chä'pö'), a seaport of China, province Chekiang, on the N. side of a large bay, 35 miles N. from Ningpu. It carries on a considerable trade with Japan.

Chapra (chap-rä'). See *Chuprah.*

Chaptal (shap-tal), JEAN ANTOINE CLAUDE, Count de Chanteloup, peer of France, was born in 1756, and devoted himself to the study of medicine and the natural sciences, and especially chemistry. He supported the revolution, and was appointed in 1799 counselor of state, and in 1800 minister of the interior, in which post he encouraged the study of the arts and established a chemical manufactory in the neighborhood of Paris. In 1805 he was made a member of the senate. On the restoration he was obliged to retire to private life, but in 1816 the king nominated him a member of the Academy of Sciences, and latterly made him a peer. Chaptal's works on national industry, chemistry, the cultivation of the vine, etc., were very much esteemed, especially his *Chimie Appliquée aux Arts* (Paris, 1807, four vols.), his *Chimie Appliquée à l'Agriculture* (Paris, 1823, two vols.), and *De l'Industrie Française* (Paris, 1819, two vols.).

Chapter (chap'ter), one of the chief divisions of a book. As the rules and statutes of ecclesiastical establishments were arranged in chapters, so also the assembly of the members of a religious order, and of canons, was called a *chapter.* The orders of knights used this expression for the meetings of their members, and some societies and corporations call their assemblies *chapters.*

Chapter-house, the building attached to a cathedral or religious house in which the chapter meets for the transaction of business. They are of different forms, but are often polygonal in plan. Sometimes they were the burying-place of clerical dignitaries. See *Cathedral.*

Char, or CHARR (chär; *Salmo umbla*), a European fresh-water fish of the salmon genus, found plentifully in the deeper lakes of England, Wales, and Ireland, more rarely in those of Scotland. The chars inhabit the colder regions of deep waters, where the temperature is less liable to vary. The body somewhat resembles that of a trout, but is longer and more slender, as well as more brilliant in coloring, with crimson, rose, and white spots; weight sometimes 2 lbs., but generally under 1 lb. Char is much esteemed for the table.

Characeæ (ka-rā'se-ē), an order of cryptogamous plants, nearly related to the Algæ, composed of an axis consisting of parallel tubes, which are either transparent or encrusted with carbonate of lime, inhabiting stagnant water, both fresh and salt, beneath which they are always submersed. They are most common in the temperate zone, and emit an unhealthy, fetid odor.

Charade (sha-rād' or sha-rād'), a kind of riddle, the subject of which is a word that is proposed for discovery from an enigmatical description of its several syllables, taken separately as so many individual and significant words. When dramatic representation is used to indicate the meaning of the syllables and the whole word it is called an acting charade.

Charadrius (ka-ra'dri-us), the genus to which the plover belongs, forming the type of the family Charadriadæ, which includes also the lapwings, pratincoles, oyster-catchers, turnstones, sanderlings, etc.

Charas (cha'ras). See *Charras*.

Charcoal (chär'kōl), a term applied to an impure variety of carbon, especially such as is produced by charring wood. One kind of it is also obtained from bones (see *Bone-black*); lampblack and coke are also varieties. Wood charcoal is prepared by piling billets of wood in a pyramidal form, with vacuities between them for the admission of air, and causing them to burn slowly under a covering of earth. In consequence of the heat, part of the combustible substance is consumed, part is volatilized, together with a portion of water, and there remains behind the carbon of the wood, retaining the form of the ligneous tissue. Another process consists in heating the wood in close vessels, by which the volatile parts are driven off, and a charcoal remains in the retorts, not so dense as that obtained by the other process. Wood charcoal, well prepared, is of a deep-black color, brittle and porous, tasteless and inodorous. It is infusible in any heat a furnace can raise; but by the intense heat of an electric furnace it is hardened, and at length is volatilized, presenting a surface with a distinct appearance of having undergone fusion. Charcoal is insoluble in water, and is not affected by it at low temperatures; hence, wooden stakes which are to be immersed in water are often charred to preserve them, and the ends of posts stuck in the ground are also thus treated. Owing to its peculiarly porous texture, charcoal possesses the property of absorbing a large quantity of air or other gases at common temperatures, and of yielding the greater part of them when heated. Charcoal likewise absorbs the odoriferous and coloring principles of most animal and vegetable substances, and hence is a valuable deodorizer and disinfectant. Water which, from having been long kept in wooden vessels, as during long voyages, has acquired an offensive smell, is deprived of it by filtration through charcoal powder. Charcoal can even remove or prevent the putrescence of animal matter. It is used as fuel in various arts, where a strong heat is required, without smoke, and in various metallurgic operations. By cementation with charcoal, iron is converted into steel. It is used in the manufacture of gunpowder. In its finer state of aggregation, under the form of ivoryblack, lampblack, etc., it is the basis of black paint; and mixed with fat oils and resinous matter, to give a due consistence, it forms the composition of printing-ink.

Chard (chärd), the leaves of artichoke covered with straw in order to blanch them and make them less bitter.—*Beet chards*, the leaf-stalks and midribs of a variety of white beet in which these parts are greatly developed, dressed for the table.

Chardin (shär-daṇ), JOHN, son of a Protestant jeweler in Paris, and a jeweler himself, was born in 1643. Sent by his father to the East Indies to buy diamonds, Chardin resided a number of years in Persia and India, and latterly published an account of his travels. He settled in London in 1681, was knighted by Charles II, was envoy to Holland for several years, and died in 1713.

Charente (shä-räṇt), a river in Western France, rising in the department of Haute-Vienne, and falling into the sea about 8 miles below Rochefort, opposite to the isle of Oleron, after a course of about 200 miles. It gives its name to two departments.—CHARENTE, an inland department, formed chiefly out of the ancient province of Angoumois, and traversed by the river Charente; area, 2294 sq miles; capital Angoulême. soil generally thin, dry, and arid; one-third devoted to tillage, a third to vineyards, and the remainder meadows, woods, and waste lands. The wines are of inferior quality, but they yield the best brandy in Europe, the celebrated cognac brandy being made in Cognac and other districts. Pop. 351,733.—CHARENTE-INFÉRIEURE (aṇ-fā-ri-eur; 'Lower Charente'), a maritime department, comprises parts of the former provinces of Angoumois and Poitou; area, 2791 sq. miles. Surface in general flat; soil chalky and sandy, fertile, and well cultivated; a considerable portion planted with vines; salt marshes along the coast. The pastures are good, and well stocked with cattle, horses, and sheep. The wine is of common quality, and chiefly used for making brandy. Oysters and sardines

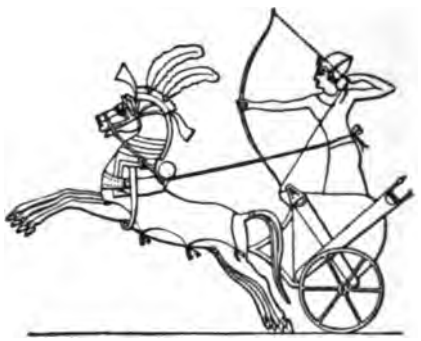
abound on the coast. Salt and brandy are the only articles manufactured to any great extent. Capital La Rochelle. Pop. 453,793.

Charenton-le-Pont (shâ-răn-tŏn-l-pŏn), town about 5 miles east from Paris, at the confluence of the Marne with the Seine, with numerous mercantile and manufacturing establishments. Pop. 18,034.

Charge (charj), in heraldry, signifies the various figures depicted on the escutcheon.—In gunnery *charge* signifies the quantity of powder used at one discharge of a gun.—*Charge*, in military tactics, is the rapid advance of infantry or cavalry against the enemy, with the object of breaking his lines by the momentum of the attack. Infantry generally advance to about 100 yards and fire, then gradually quicken their pace into the charge-step, and dash at the enemy's lines. Cavalry charge in echelon or column against infantry, which is usually formed in squares to receive them.

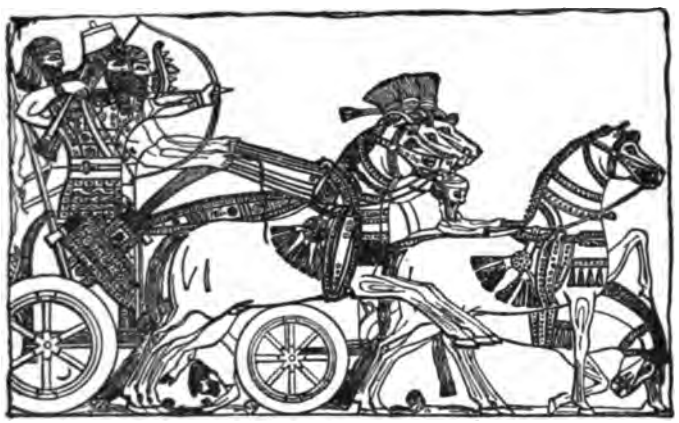
Chargé-d'Affaires (shăr-zh ă-d à f-ăr), the title of an inferior rank of diplomatic agents. See *Minister, Foreign.*

for pleasure and in war. Chariots, such as those used among the Egyptians, Assyrians, Greeks, and Romans, were of various forms. A common form was open



Egyptian War-chariot.—Rosellini.

behind and closed in front, and had only two wheels. The chariot was strongly and even elegantly built, but not well adapted for speed. In ancient warfare chariots were of great importance; thus we read of the 900 iron chariots of Sisera



Assyrian War-chariot.—Layard

Charikar (char-i-kăr'), a town of Afghanistan, in the district of Kohistan, 21 miles north of Cabul. Pop. 5000.

Charing-Cross (chăr'ing-kros), the titular center of London, so named from a cross which stood until 1647 at the village of Charing in memory of Eleanor, wife of Edward I. It is now a triangular piece of roadway at Trafalgar Square.

Chariot (char'i-ot), a term applied to vehicles used anciently both

as giving him a great advantage against the Israelites. The Philistines in their war against Saul had 30,000 chariots. The sculptures of ancient Egypt show that the chariots formed the strength of the Egyptian army, these vehicles being two-horsed and carrying the driver and the warrior, sometimes a third man, the shield-bearer. There is no representation of Egyptian soldiers on horseback, and consequently when Moses in his song of triumph over Pharaoh speaks of the 'horse and his rider,' 'rider' must be un-

derstood to mean chariot-rider. In the Egyptian chariots the framework, wheels, pole, and yoke were of wood, and the fittings of the inside, the bindings of the framework, as well as the harness were chiefly of raw hide or of tanned leather. We have also numbers of sculptures which give a clear idea of the Assyrian chariots. These resembled the Egyptian in all essential features, containing almost invariably three men—the warrior, the shield-bearer, and the charioteer. A peculiarity of both is the quiver or quivers full of arrows attached to the side. The Assyrian war-chariot shown in the figure is drawn by three horses abreast, and all the appointments are rich and elaborate. It has, as will be noticed, two quivers crossing each other on the side, filled with arrows, and each also containing a small ax. A socket for holding the spear is also attached. From the front of the chariot a singular ornamental appendage stretches forward.

Chariton (shar'i-ton), a city, county seat of Lucas Co., Iowa, 56 miles S. by E. of Des Moines, on the Chariton River. It has coal mines and manufactures of vehicles, farm implements, cement blocks, pumps, windmills, etc. Pop. (1910) 3794; (1920) 5175.

Charity, Sisters of. See *Sisters of Charity.*

Charkov (kär'kof). See *Kharkoff.*

Charlemagne (shär-lē-mān'; *Carolus Magnus*, Charles the Great), King of the Franks, and subsequently Emperor of the West, was born in 742, probably at Aix-la-Chapelle. His father was Pepin the Short, King of the Franks, son of Charles Martel. On the decease of his father, in 768, he was crowned king, and divided the kingdom of the Franks with his younger brother Carloman, at whose death in 771 Charlemagne made himself master of the whole empire, which embraced, besides France, a large part of Germany. His first great enterprise was the conquest of the Saxons, a heathen nation living between the Weser and the Elbe, which he undertook in 772; but it was not till 803 that they were finally subdued, and brought to embrace Christianity. While he was combating the Saxons, Pope Adrian implored his assistance against Desiderius, King of the Lombards. Charlemagne immediately marched with his army to Italy, took Pavia, overthrew Desiderius, and was crowned King of Lombardy with the iron crown. In 778 he repaired to Spain to assist a Moorish prince, and while returning his troops were surprised in the valley of Roncesvalles by the Biscayans, and the rear-guard defeated; Roland, one of the most famous warriors of those times, fell in the battle. As his power increased, he meditated more seriously the accomplishment of the plan of his ancestor, Charles Martel, to restore the Western Empire of Rome. Having gone to Italy to assist the pope, on Christmas-day 800 he was crowned and proclaimed Cæsar and Augustus by Leo III, the titles of the Roman emperors being thus restored. His son Pepin, who had been made King of Italy, died in 810, and his death was followed the next year by that of Charles, his eldest son. Thus of his legitimate sons one only remained, Louis, King of Aquitania, whom Charlemagne adopted as his colleague in 813. He died Jan. 28, 814, in the forty-seventh year of his reign, and was buried at Aix-la-Chapelle, his favorite and usual place of residence. Charlemagne was a friend of learning, and deserves the name of restorer of the sciences and teacher of his people. He attracted by his liberality the most distinguished scholars to his court (among others, Alcuin, from England), and established an academy in his palace at Aix-la-Chapelle, the sittings of which he attended with all the scientific and literary men of his court. He invited teachers of language and mathematics from Italy to the principal cities of the empire, and founded schools of theology and the liberal sciences in the monasteries. He strove to cultivate his mind by intercourse with scholars; and, to the time of his death, this intercourse remained his favorite recreation. His mother-tongue was a form of German, but he spoke several languages readily, especially the Latin, and was naturally eloquent. He sought to improve the liturgy and church music, and attempted unsuccessfully to introduce uniformity of measures and weights. He built a lighthouse at Boulogne, constructed several ports, encouraged agriculture, and enacted wise laws. He convened councils and parliaments, published capitularies, wrote many letters (some of which are still extant), a grammar, and several Latin poems. His empire comprehended France, most of Catalonia, Navarre, and Aragon, the Netherlands, Germany as far as the Elbe, Saale, and Eider, Upper and Middle Italy, Istria, and a part of Sclavonia. In private life Charlemagne was exceedingly amiable; a good father, and generous friend. In dress and habits he was plain and economical. His only excess was his love of the other sex. In person he was strong and of great stature. He was succeeded by his son Louis (le Débonnaire).

Charlemont (shärl-mŏn). See *Givet*.

Charleroi (shärl-rwä), a town in Belgium, province of Hainaut, on both sides of the river Sambre, 20 miles E. N. E. Mons. It has manufactures of glass, ironware, etc., and woolen stuffs. Pop. 26,528.

Charleroi (shär-le-roi'), a borough of Washington Co., Pennsylvania, 40 miles E. by S. of Pittsburgh. It has coaling industries, plate-glass and bottling works, etc. Pop. 11,516.

Charles I, Emperor of Austria and King of Hungary, born 1887, grandson of Archduke Charles Louis, brother of the emperor Francis Joseph. On the death of the latter Charles became emperor, Nov. 21, 1916; abdicated Nov. 12, 1918, following defeat of the empire.

Charles I, surnamed *le Chauve*, or *the Bald*, King of France, was son of Louis de Débonnaire, and was born 823. After his father's death in 840 he fought with his half-brother Lothaire for the empire of the Franks, and finally acquired by the Treaty of Verdun (843) all those territories between the ocean on the one side, and the Meuse, the Scheldt, the Saône, the Rhone, and the Mediterranean, on the other. But he lost Southern Aquitaine to his nephew Pepin, and had to divide Lorraine with his brother Louis the German. In 875 he was crowned emperor by Pope John VIII. He died in 877.

Charles II, surnamed *le Gros*, or *the Fat*, King of France, is also known as Charles III, Emperor of Germany, and was born about 832. He was the son of Louis the German, and ascended the French throne in 885 to the prejudice of his cousin, Charles the Simple, but was deposed in 887 and died the following year.

Charles III, King of France, surnamed *the Simple*, was the son of Louis the Stammerer, and born in 879. His reign is noted for his long struggle with the piratical Northmen or Normans. He died in 929.

Charles IV, King of France, surnamed *le Bel*, or *the Handsome*, third son of Philippe le Bel, was born in 1294, and ascended the throne in 1322. He died in 1328, without male issue, and was the last of the direct line descended from Hugh Capet.

Charles V, surnamed *the Wise*, King of France, was the son of John II, and was born in 1337. His father being taken prisoner by the English at Poitiers in 1356, the management of the kingdom devolved on him at an early age. With great skill and energy, not free, however, from duplicity, he suppressed the revolt of the Parisians and a rising of the peasants, kept the King of Navarre at bay, and deprived the English of a great part of their dominion in France. He died in 1380. He erected the Bastille for the purpose of overawing the Parisians.

Charles VI, surnamed the *Silly*, King of France and son of the foregoing, was born at Paris in 1368, and in 1388 took the reins of government into his own hands. Four years later he lost his reason, and one of the most disastrous periods of French history began. The kingdom was torn by the rival factions of Burgundians and Armagnacs (Orleanists). In 1415 Henry V of England crossed over to Normandy, took Harfleur by storm, won the famous victory of Agincourt, and compelled the crazy king to acknowledge him as his successor. Charles died in 1422.

Charles VII, King of France, was born at Paris in 1403. He succeeded only to the southern provinces of the kingdom, Henry VI of England being proclaimed king of France at Paris. The English dominion in France was under the government of the Duke of Bedford, and so skillfully did the English general conduct his operations that Charles had almost abandoned the struggle as hopeless when the appearance of Jeanne d'Arc, the *Maid of Orleans*, gave, as if by a miracle, a favorable turn to his affairs, and the struggle ended in the expulsion of the English from all their possessions in France except Calais. Charles died in 1461.

Charles VIII, King of France, son of Louis XI, was born in 1470, and succeeded his father in 1483. In 1491 he married Anne, the heiress of Brittany, and thereby annexed that important duchy to the French crown. The chief event in the reign of Charles VIII is his expedition into Italy, and rapid conquest of the kingdom of Naples, a conquest as rapidly lost when a few months later Gonsalvo de Cordova reannexed it to Spain. Charles was meditating a renewed descent into Italy when he died in 1498.

Charles IX, King of France, son of Henry II and Catharine de' Medici, born in 1550, ascended the throne at the age of ten years. His haughty and ambitious mother seized the control of the state. Along with the Guises she headed the Catholic League against the Calvinists, and her tortuous and unscrupulous policy helped to embitter the religious strife of the factions. After a series of Huguenot persecutions and civil wars a peace was made in

1570, which, two years later, on 24th August, 1572, was treacherously broken by the *Massacre of St. Bartholomew*. The king, who had been little more than the tool of his scheming mother, died two years afterwards, in 1574.

Charles X, King of France, Comte d'Artois, born at Versailles in 1757, grandson of Louis XV, was the youngest son of the dauphin, and brother of Louis XVI. He left France in 1789, after the first popular insurrection and destruction of the Bastille, and afterwards assuming the command of a body of emigrants, acted in concert with the Austrian and Prussian armies on the Rhine. Despairing of success, he retired to Great Britain and resided for several years in the palace of Holyrood at Edinburgh. He entered France at the Restoration, and in 1824 succeeded his brother, Louis XVIII, as king. In a short time his reactionary policy brought him into conflict with the popular party, and in 1830 a revolution drove him from the throne. He died in 1836. His grandson, the Comte de Chambord (which see), claimed the French throne as his heir.

Charles IV, Emperor of Germany, of the house of Luxemburg, was born 1316, and was the son of King John of Bohemia. In 1346 he was elected emperor by five of the electoral princes, while the actual emperor Louis the Bavarian was still alive. On the death of the latter a part of the electors elected Count Gunther of Schwarzburg, who soon after died; and Charles at length won over his enemies, and was elected and consecrated emperor at Aix-la-Chapelle. In 1354 he went to Italy and was crowned King of Italy at Milan, and emperor at Rome the year following. On his return to Germany in 1356 Charles issued his *Golden Bull* (which see) regulating the election of the German emperors. He died at Prague in 1378. Charles was artful, but vacillating, and careless of all interests but those of his own family and his hereditary kingdom of Bohemia. In Germany bands of robbers plundered the country, and the fiefs of the empire were alienated. In Italy Charles sold states and cities to the highest bidder, or if they themselves offered most, made them independent republics. But Bohemia flourished during his reign. He encouraged trade, industry, and agriculture, made Prague a great city, and established there the first German university (1348).

Charles V, Emperor of Germany and King of Spain (in the latter capacity he is called Charles I), the eldest son of Philip, Archduke of Austria, and of Joanna, the daughter of Ferdinand and Isabella of Spain, was born at Ghent, Feb. 24, 1500. Charles was thus the grandson of the Emperor Maximilian and Mary, daughter of Charles the Bold, last Duke of Burgundy, and inherited from his grandparents on both sides the fairest countries in Europe, Aragon, Naples, Sicily, Sardinia, Castile, and the colonies in the New World, Austria, Burgundy, and the Netherlands. On the death of Ferdinand, his grandfather, Charles, assumed the title of King of Spain. In 1519 he was elected emperor, and was crowned at Aix-la-Chapelle with extraordinary splendor. The progress of the Reformation of Germany demanded the care of the new emperor, who held a diet at Worms. Luther, who appeared at this diet with a safe-conduct from Charles, defended his case with

Charles V of Germany

energy and boldness. The emperor kept silent; but after Luther's departure a severe edict appeared against him in the name of Charles, who thought it his interest to declare himself the defender of the Roman Church. A war with France, which the rival claims of Francis I in Italy, the Netherlands, and Navarre made inevitable, broke out in 1521. Neither side had a decided success till the battle of Pavia in 1525, where Francis was totally defeated and taken prisoner. Charles treated his captive with respect, but with great rigor as regarded the conditions of his release. A league of Italian states, headed by Pope Clement VII, was now formed against the overgrown power of Charles; but their ill-directed efforts had no success. Rome itself was stormed and pillaged by the troops of the Constable of Bourbon, and the pope made prisoner. Nor was the alliance of Henry VIII of England with

Francis against the emperor any more successful, the war ending in a treaty (Cambray, 1529) of which the conditions were favorable to Charles. A war against the Turks by which Solyman was compelled to retreat, and an expedition against the Dey of Tunis by which 20,000 Christian slaves were released, added to the influence of Charles, and acquired for him the reputation of a chivalrous defender of the faith. In 1537 he made truce with Francis, and soon after, while on his way to the Netherlands, spent six days at the court of the latter in Paris. In 1541 another expedition against the African Moors, by which Charles hoped to crown his reputation, was unsuccessful, and he lost a part of his fleet and army before Algiers without gaining any advantage. A new war with France arose regarding the territory of Milan. The quarrel was patched up by the peace of Crespy in 1545. The religious strife was again disturbing the emperor. Charles, who was no bigot, sought to reconcile the two parties, and with this view alternately courted and threatened the Protestants. At length in 1546 the Protestant princes declared war, but were driven from the field and compelled to submit. But the defection of his ally, Maurice of Saxony, whom Charles had invested with the electoral dignity, again turned the tide in favor of the Protestants. Maurice surprised the imperial camp at Innsbruck in the middle of a stormy night, and Charles with great difficulty escaped alone in a litter. The Treaty of Passau was dictated by the Protestants. It gave them equal rights with the Catholics, and was confirmed three years later by the diet of Augsburg (1555). Foiled in his schemes and dejected with repeated failures, Charles resolved to resign the imperial dignity, and transfer his hereditary estates to his son Philip. In 1555 he conferred on him the sovereignty of the Netherlands, and on January 15, 1556, that of Spain, retiring himself to a residence beside the monastery of Yuste in Estremadura, where he amused himself by mechanical labors and the cultivation of a garden. He still took a strong interest in public affairs, though in his later years he was very much of an invalid, his ill health being partly caused by his gourmandizing habits. He died on Sept. 21, 1558.

Charles VI, German emperor, the second son of the Emperor Leopold I, was born Oct. 1, 1685. He was destined, according to the ordinary rules of inheritance, to succeed his relative Charles II on the throne of Spain. But Charles II by his will made a French prince, Philip, Duke of Anjou, grandson of Louis XIV, heir to the Spanish monarchy. This occasioned the war of the Spanish Succession, in which England and Holland took the part of the Austrian claimant. Charles held possession of Madrid for a time, and was supported by the skill of Marlborough and Eugene, but he was eventually obliged to resign Spain to the French claimant, and content himself with the Spanish subject-lands, Milan, Mantua, Sardinia, and the Netherlands (Treaty of Utrecht, 1713, and Treaty of Rastadt, 1714). He became emperor in 1711. In a war against the Turks his armies, led by Eugene of Savoy, gained the decisive victories of Peterwardein and Belgrade. After the death of his only son, Charles directed all his policy and energies to secure the guarantee of the various powers to the Pragmatic Sanction, which settled the succession to the Austrian dominions on his daughter Maria Theresa. In 1733 a war with France and Spain regarding the succession in Poland terminated unfavorably for him, he having to surrender Sicily, Naples, and part of Milan to Spain, and Lorraine to France. In 1727 he renewed the war with the Turks, this time unsuccessfully. Charles died Oct. 20, 1740.

Charles VII, Emperor of Germany, born in 1697, was the son of Maximilian Emanuel, elector of Bavaria. In 1726 he succeeded his father as Elector of Bavaria. He was one of the princes who protested against the Pragmatic Sanction, and after the death of Charles VI (see above), in 1740, he refused to acknowledge Maria Theresa as heiress. In support of his own claims he invaded Austria with an army, took Prague, was crowned King of Bohemia, and in 1742 was elected emperor. But fortune soon deserted him. The armies of Maria Theresa reconquered all Upper Austria, and overwhelmed Bavaria. Charles fled to Frankfort, and returning to Munich in 1744, died there the following year.

Charles I, King of England, Scotland, and Ireland, was born at Dunfermline, Scotland, in the year 1600, and was the third son of James VI and Anne of Denmark. He married Henrietta Maria, daughter of Henry IV of France, and in 1625 succeeded to the throne, receiving the kingdom embroiled in a Spanish war. The first parliament which he summoned, being more disposed to state grievances than grant supplies, was dissolved. Next year (1626) a new parliament was summoned; but the House proved no more

tractable than before, and was soon dissolved. In 1628 the king was obliged to call a third parliament, which showed itself as much opposed to arbitrary measures as its predecessor, and after voting the supplies prepared the *Petition of Right*, which Charles was constrained to pass into a law. But the determined spirit with which the parliament resisted

Charles I of England.

the king's claim to levy tonnage and poundage on his own authority led to a rupture, and Charles again dissolved the parliament, resolving to try and reign without one. In this endeavor he was supported by Strafford and Laud as his chief counselors. With their help Charles continued eleven years without summoning a parliament, using the arbitrary courts of High Commission and Star-chamber as a kind of cover for pure absolutism, and raising money by unconstitutional or doubtful means. In 1637 John Hampden began his career of resistance to the king's arbitrary measures by refusing to pay ship-money, the right to levy which, without authority of parliament, he was determined to bring before a court of law. His cause was argued for twelve days in the Court of Exchequer; and although he lost it by the decision of eight of the judges out of twelve, the discussion of the question produced a very powerful impression in the public mind. It was in Scotland, however, that formal warlike opposition was destined to commence. The attempts of Charles to introduce an Anglican liturgy into that country produced violent tumults, and gave origin to the famous *Covenant* in 1638, to oppose the king's design. An English army was sent north, but was defeated by the army of the Covenanters, and in 1640 a parliament was again summoned, which proved to be the famous Long Parliament. An account of the struggle between king and parliament, the trial and execution of Strafford and Laud, etc., cannot here be given, but the result was that both king and parliament made preparations for war. The king had on his side the great bulk of the gentry, while nearly all the Puritans and the inhabitants of the great trading towns sided with the parliament. The first action, the battle of Edgehill (23d Oct., 1642), gave the king a slight advantage; but nothing very decisive happened till the battle of Marston Moor, in 1644 where Cromwell routed the royalists. The loss of the battle of Naseby, the year following, completed the ruin of the king's cause. Charles at length gave himself up to the Scottish army at Newark (5th May, 1646). After some negotiations he was surrendered to the commissioners of the parliament. The extreme sect of the Independents, largely represented in the army and headed by Cromwell, now got the upper hand, and coercing the parliament and the more hesitating of the Presbyterians, brought Charles to trial for high treason against the people, and had sentence of death pronounced against him. All interposition being vain, he was beheaded before the Banqueting House, Whitehall, on 30th Jan., 1649, meeting his fate with great dignity and composure. Charles had many good qualities. Possessed of a highly-cultivated mind, with a fine judgment in arts and letters, he was also temperate, chaste, and religious, and, although somewhat cold in his demeanor, kind and affectionate. Nor was talent wanting to him. But these merits were counterbalanced and all but neutralized by a want of self-reliance and a habit of vacillation, which in his position had the effect of insincerity. Coupled with this was a temperament which would not brook control and tended to absolutism.

Charles II, King of England, Ireland, and Scotland, son of Charles I and Henrietta Maria of France, was born in 1630. He was a refugee at The Hague on the death of his father, on which he immediately assumed the royal title. Cromwell was then all-powerful in England; but Charles accepted an invitation from the Scots, who had proclaimed him their king July, 1650, and, passing over to Scotland, was crowned at Scone (1651). Cromwell's approach made him take refuge among the English royalists, who, having gathered an army, encountered Cromwell at Worcester and were totally defeated. With great difficulty Charles escaped to

France. On the death of Cromwell the Restoration effected without a struggle by General Monk set Charles on the throne after the declaration of Breda, his entry into the capital (29th May, 1660) being made amidst universal acclamations. In 1662 he married the Infanta of Portugal, Catharine of Braganza, a prudent and virtuous princess, but in no way calculated to acquire the affection of a man like Charles. For a time his measures, mainly counseled by the chancellor, Lord Clarendon, were prudent and conciliatory. But the indolence, extravagance, and licentious habits of the king soon involved the nation as well as himself in difficulties. Dunkirk was sold to the French to relieve his pecuniary embarrassment, and war broke out with Holland. A Dutch fleet entered the Thames, and burned and destroyed ships as far up as Chatham. The great plague in 1665, and the great fire of London the year following, added to the disasters of the period. In 1667 Clarendon was dismissed, and a triple alliance between England, Holland, and Sweden, for the purpose of checking the ambition of Louis XIV, followed; but the extravagance of the king made him willing to become a mere pensioner of Louis XIV, with whom he arranged a private treaty against Holland in 1670. The *Cabal* ministry was by this time in power, and they were quite ready to break the triple alliance and bring about a rupture with the Dutch. As the king did not choose to apply to parliament for money to carry on the projected war, he caused the exchequer to be shut up in January, 1672, and by several other disgraceful and arbitrary proceedings gave great disgust and alarm to the nation. The war ended in failure, and the Cabal ministry was dissolved in 1673. The year 1678 was distinguished by the pretended Popish plot of Titus Oates, which led to the exclusion of Roman Catholics from parliament. In 1679 the Habeas Corpus Act was passed, and the temper of the parliament was so much excited that the king dissolved it. A new parliament which assembled in 1680 had to be dissolved for a like reason, and yet another which met the year following at Oxford. Finally Charles, like his father, determined to govern without a parliament, and after the suppression of the Rye House plot and the execution of Russell and Sidney re-established an absolute rule. He died from the consequences of an apoplectic attack in February, 1685, after having received the sacrament according to the rites of the Roman Church. Charles was a man of wit, and possessed an easy good nature, but was entirely selfish, and indifferent to anything but his own pleasure. He had no patriotism, honor, or generosity, but was not destitute of the ability to rule. He had no legitimate children. His mistresses were numerous, and several of them were raised to the highest ranks of nobility, while six of his illegitimate sons were made dukes.

Charles XII, King of Sweden, was born at Stockholm, June 27, 1682. On the death of his father, in 1697, when he was but fifteen years old, he was declared of age by the estates. To his jealous neighbors this seemed a favorable time to humble the pride of Sweden. Frederick IV of Denmark, Augustus II of Poland, and the Czar Peter I of Russia concluded an alliance which resulted in war against Sweden. With the aid of an English and Dutch squadron the Danes were soon made to sign peace, but Augustus of Saxony and Poland, and the czar were still in the field. Rapidly transporting 20,000 men to Livonia, Charles stormed the czar's camp at Nerva, slaying 30,000 Russians and dispersing the rest (30th Nov., 1700). Crossing the Dwina he then attacked the Saxons and gained a decisive victory. Following up this advantage he won the battle of Clissau, drove Augustus from Poland, had the crown of that country conferred on Stanislaus Leczinsky, and dictated the conditions of peace at Altranstadt in Saxony in 1706. In September, 1707, the Swedes left Saxony to invade Russia, Charles taking the shortest route to Moscow. At Smolensk he altered his plan, deviated to the Ukraine to gain the help of the Cossacks, and weakened his army very seriously by difficult marches through a district extremely cold and ill supplied with provisions. In this condition Peter marched upon him with 70,000 men, and defeated him completely at Pultawa. Charles fled with a small guard and found refuge and an honorable reception at Bender, in the Turkish territory. Here he managed to persuade the Porte to declare war against Russia. The armies met on the banks of the Pruth (July 1, 1711) and Peter seemed nearly ruined, when his wife, Catharine, succeeded in bribing the grand vizier, and procured a peace in which the interests of Charles were neglected. The attempts of Charles to rekindle a war were vain, and after having spent some years at Bender he was forced by the Turkish government to leave. Arrived in his own country in 1714, he set about the measures necessary to defend the kingdom, and the fortunes of Sweden were beginning to assume a favorable aspect

when he was slain by a cannonball as he was besieging Frederikshall, Norway, Nov. 30, 1718. Firmness, valor, and love of justice were the great features in the character of Charles, with which were combined a remarkable military genius and a desire to emulate the career of Alexander the Great. But his rashness and obstinacy were such as to negative the effect of his high powers. After his death Sweden sank from the rank of a leading power. Voltaire's *Life of Charles XII* gives a picturesque account of his career.

Charles XIII, King of Sweden, was born in 1748, being the second son of King Adolphus Frederick. In the war with Russia, in 1788, he received the command of the fleet, and defeated the Russians in the Gulf of Finland. After the murder of his brother, Gustavus III, in 1792, he was placed at the head of the regency, and gained universal esteem in that position. The revolution of 1809 placed him on the throne at a very critical period, but his prudent conduct procured the union of Sweden with Norway, Nov. 4, 1814. He adopted as his successor Marshal Bernadotte, who became king on the death of Charles, Feb. 5, 1818.

Charles XIV. See *Bernadotte.*

Charles I, King of Spain. See *Charles V, Emperor of Germany.*

Charles IV, King of Spain, born at Naples 12th Nov., 1784, succeeded his brother Ferdinand VI in 1788, was all his life completely under the influence of his wife and her paramour Godoy. In 1808 Charles abdicated in favor of Napoleon. He died in 1819.

Charles I, King of Roumania, was born in 1839, son of the German Prince Karl Anton of Hohenzollern-Sigmaringen. He was elected Prince of Roumania in 1866 and was crowned king in 1881, following the Russo-Turkish war. His wife, Elizabeth, daughter of Prince Herman of Wied, became a notable author under the pen name of Carmen Sylva. On the outbreak of the European war he maintained the neutrality of Roumania and kept in close touch with the Triple Alliance. He died on October 10, 1914, and was succeeded by his nephew, Prince Ferdinand of Hohenzollern-Sigmaringen, in default of direct heirs.

Charles, ARCHDUKE OF AUSTRIA, third son of the Emperor Leopold II, was born in Florence 5th Sept., 1771. Commander-in-chief of the Austrian army on the Rhine, he won several victories against the French. In 1805 he commanded in Italy against Masséna, and won Caldiero (31st Oct.); but in the campaign of 1809 in Germany against Napoleon he was unsuccessful, the battle of Wagram (5th and 6th July) laying Austria at the feet of the French emperor. With that event the military career of Charles closed. He died in 1847. He published several military works of value.

Charles Albert, King of Sardinia, born 1798, was the son of Charles Emmanuel, Prince of Savoy-Carignan. In 1831 he succeeded to the throne on the death of Charles Felix, but his government at first greatly disappointed the liberal party by its despotic tendencies. It was not till near 1848 that, seeing the growing strength of the progressive and national movement in Italy, he took up the position of its champion. As such he took the field against Austria on behalf of the Lombardo-Venetian provinces, but was crushingly defeated at Novara, 23d March, 1849. He abdicated in favor of his son, Victor Emmanuel, and, retiring to Portugal, died 28th July, 1849.

Charles Augustus, Grand Duke of Saxe-Weimar, born in 1757; died in 1828. He succeeded to the dukedom in 1775, and because of his lasting friendship with Goethe, gathered around him a coterie of literary people, which made his court famous. He was one of the few rulers at that time with democratic impulses.

Charles City, a city, county seat of Floyd Co., Iowa, on the Cedar River. Manufactures include furniture, traction engines, etc. Charles City College (incorporated 1891) is located here. Pop. 7350.

Charles City Cross Roads, a locality in Virginia, 12 miles S. E. of Richmond, made famous by a battle in the Civil war between the Confederates under Longstreet and Hill, and the Federals under McClellan, June 30, 1862.

Charles Edward Stuart, called the *Pretender*, grandson of James II, King of England, son of James Edward and Clementina, daughter of Prince Sobieski, was born in 1720 at Rome. In 1742 he went to Paris and persuaded Louis XV to assist him in an attempt to recover the throne of his ancestors. Fifteen thousand men were on the point of sailing from Dunkirk, when the English admiral Norris dispersed the whole fleet. Charles now determined to trust to his own exertions. Accompanied by seven officers he landed on the west coast of Scotland

from a small ship called the *Doutelle*. Many Lowland nobles and Highland chiefs went over to his party. With a small army thus formed he marched forward, captured Perth, then Edinburgh (Sept. 17, 1745), defeated an army of 4000 British under Sir John Cope at Prestonpans (Sept. 22), and advancing obtained possession of Carlisle. He now caused his father to be proclaimed King and himself Regent of England; removed his headquarters to Manchester, and soon found himself within 100 miles of London, where many of his friends awaited his arrival. The rapid successes of the adventurer now caused a part of the British forces in Germany to be recalled. Want of support, disunion, and jealousy among the adherents of the house of Stuart, some errors, and the superior force opposed to him, compelled Prince Charles to retire in the beginning of 1746. The victory at Falkirk (Jan. 28, 1746) was his last. As a final attempt he risked the battle of Culloden against the Duke of Cumberland, April 16, 1746, in which his army was defeated and entirely dispersed. The prince now wandered about for a long time through the wilds of Scotland, often without food, and the price of £30,000 sterling was set upon his head. At length, on Sept. 20, 1746, five months after the defeat of Culloden, he escaped in a French frigate. He received a pension of 20,000 livres yearly from France, and of 12,000 doubloons from Spain. Forced to leave France by the terms of the Peace of Aix-la-Chapelle (1748), he went to Italy, and in 1772 married a princess of Stolberg-Gedern, from whom eight years later he was separated. (See *Albany*.) In the end he fell into habits of intoxication, died Jan. 31, 1788, and was buried at Frascati. The funeral service was performed by his only surviving brother, the Cardinal of York, with whose death in 1807 the Stuart line ended. The cardinal received a pension from Britain of £4000 a year till his death.

Charles Martel', ruler of the Franks, was a son of Pepin Héristal. His father had governed as mayor of the palace under the weak Frankish kings with so much justice that he was enabled to make his office hereditary in his family. Chilperic II, king of the Franks, refusing to acknowledge Charles Martel as mayor of the palace, the latter deposed him, and set Clothaire IV in his place. After the death of Clothaire he restored Chilperic, and subsequently placed Thierri on the throne. Charles Martel rendered his rule famous by the great victory which he gained in October, 732, over the Saracens, near Tours, from which he acquired the name of *Martel*, signifying *hammer*. He died 741. Charlemagne was his grandson. See *Charlemagne*.

Charles the Bold, Duke of Burgundy, son of Philip the Good and Isabella of Portugal, born at Dijon Nov. 10, 1433. While his father yet lived Charles left Burgundy, and forming an alliance with some of the great French nobles for the purpose of preserving the power of the feudal nobility, he marched on Paris with 20,000 men, defeated Louis XI at Montlhéri, and won the counties of Boulogne, Guines, and Ponthieu. Succeeding his father in 1467, he commenced his reign by severe repression of the citizens of Liège and Ghent. In 1468 he married Margaret of York, sister of Edward IV of England. Liège having rebelled, the duke stormed and sacked the town. In 1470 the war with France was renewed, and although the duke was forced to sue for a truce he soon took up arms anew, and, crossing the Somme, stormed and fired the city of Nesle. Louis meanwhile involved him in greater embarrassments by exciting against him Austria and the Swiss. Charles, ever ready to take up a quarrel, threw himself on Germany with characteristic fury, and lost ten months in a futile siege of Neuss. He was successful, however, in conquering Lorraine from Duke René. Charles now turned his arms against the Swiss, took the city of Granson, putting 800 men to the sword. But this cruelty was speedily avenged by the descent of a Swiss army, which at the first shock routed the duke's forces at Granson, March 3, 1476. Mad with rage and shame Charles gathered another army, invaded Switzerland, and was again defeated with great loss at Morat. The Swiss, led by the Duke of Lorraine, now undertook the reconquest of Lorraine, and obtained possession of Nancy. Charles marched to recover it, but was utterly routed and himself slain. The house of Burgundy ended in him, and his death without male heirs removed the greatest of those independent feudal lords whose power stood in the way of the growth of the French monarchy. His daughter Mary married Maximilian of Germany, but most of his French territory passed into the hands of the French king.

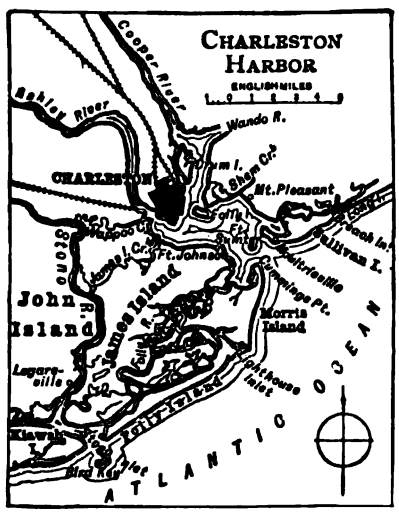
Charles the Great. See *Charlemagne*.

Charles River, a short river in Massachusetts, which flows into Boston harbor, separating Boston from Charlestown. It affords motive

power for many factories and is navigable for a few miles above Boston.

Charles's Wain. See *Bear, Great.*

Charleston (Charls'tun), a city and seaport of South Carolina, on a tongue of land formed by the confluence of the rivers Cooper and Ashley, which unite just below the city, and form a spacious and convenient harbor extending about 7 miles to the Atlantic, and defended by several forts. The city is regularly laid out, most of the principal thoroughfares being 60 to 70 feet wide and bordered with fine shade-trees. It has become the metropolis of the Carolinas, and is one of the leading commercial cities and seaports in the south. Its insti-



tutions are numerous, including the Charleston Library, founded in 1743, the College of Charleston, 1785, and the Orphan House, 1794, one of the oldest institutions of its kind in the country; and the Charleston Museum, the oldest in America. The staple exports are cotton, rice, lumber, and phosphate, as well as manufactured goods from the Midwest. It also has important manufacturing industries and is a military and naval center. It has a navy yard and a naval encampment, with provision for 5000 recruits.

It was the scene of the outbreak of the Civil war, April 12, 1861, and was evacuated by the Confederacy February 7, 1865. Pop. (1910) 58,833; (1920) 67,957.

Charleston, a city, capital of West Virginia, at the confluence of the Great Kanawha and Elk Rivers, in Kanawha Co., near the center of the State. It was incorporated in 1794, chartered as a city in 1870. It is the center of large coal and gas fields. Other industries include gun forging and high explosives, steel plants, iron foundries, wood-working, sheet glass (notably the Libbey-Owens factory), lamp chimneys, chemicals, fire brick, terra cotta clays, kaolin, bauxite, hard and soft lumber, salt brine, etc. Pop. (1910) 22,996; (1920) 39,608.

Charleston, a city, county seat of Coles Co., Illinois, 45 miles w. of Terre Haute. It has flour mills and various manufactures. Oil, coal and gas are found in the region. It is the seat of the Eastern Illinois Normal School. Pop. (1920) 6615.

Charlestown, a former city of Middlesex Co., Massachusetts, incorporated with Boston (q. v.) in 1874. Scene of the Battle of Bunker Hill (q. v.), June 17, 1775. There is a U. S. Navy Yard here.

Charleville (shärl-vēl'), a town of France, department of Ardennes, on the Meuse, opposite Mezieres. It has a large trade in coal, iron, wine, etc. Pop. 22,654.

Charlock. See *Mustard.*

Charlotte (shär'lot), a city, county seat of Mecklenburg Co., North Carolina. It is the center of the cotton mill industry of the South, with over 700 textile mills and 170 cotton oil mills within a radius of 150 miles. It has over 160 widely diversified manufacturing and industrial plants with an annual payroll of over $10,000,000. Textile mill machinery and equipment are among its important products. It is the Southern market for dyestuffs, and is a large distributing point for automobiles. Center of extensive hydro-electric development. It is the home of Queens College for Women and other colleges. Here was signed the first Declaration of Independence, May 20, 1775, by the colonists of Mecklenburg Co. Pop. (1910) 34,014; (1920) 46,338.

Charlotte, a city, county seat of Eaton Co., Michigan, 18 miles s. w. of Lansing on the Grand Trunk and Michigan Central Railroads. It has manufactures of automobiles, furniture, farm implements, etc. Pop. 5126.

Charlotte-Amalie, (shär-lot'ä-ma'-le-ä), a town of the island of St. Thomas, Virgin Islands, belonging to the United States. It has an excellent harbor with a floating dock. It is an important coaling and oil-refueling station. Pop. 7747.

Charlottenburg (shär-lot'en-burĥ), a town of Prussia, on the Spree, about 3 miles from Berlin, with a royal palace and park, many beautiful villas and handsome monuments, also important industrial and manufacturing establishments, especially of electrical appliances. Pop. 305,978.

Charlottesville (shär'lots-vil), a city of Virginia, 97 miles W. N. W. of Richmond. It is the seat of the University of Virginia, founded by Thomas Jefferson, and near by is Monticello, Jefferson's home. It has flour mills, railroad shops, woolen and silk mills, etc., and is in a rich farming and fruit-growing district. Pop. 10,688.

Charlottetown, a town of British North America, capital of Prince Edward Island, on Hillsborough Bay, 110 miles N. of Halifax. It contains handsome public buildings and churches, is advantageously situated for commerce, and its harbor is one of the best in North America. Pop. (1911) 11,198.

Charm, anything believed to possess some occult or supernatural power, such as an amulet, spell, etc., but properly applied (as the name, derived from Lat. *carmen* a song, indicates) to spells couched in formulas of words or verses.

Char'nel-house, a chamber or building under or near churches where the bones of the dead are deposited.

Charon (kā'ron), in Greek mythology, the son of Erebus and Night. It was his office to ferry the dead in his crazy boat over the rivers of the infernal regions, for which office he received an obolus, or farthing, which accordingly was usually put into the mouth of the deceased. He was represented as an old man with a gloomy aspect, matted beard, and tattered garments.

Charpie (shär'pē), lint for dressing wounds.

Charpoy (shär'poi), in the East Indies, a small portable bed, consisting of a wooden frame resting on four legs, with bands across to support the bedding.

Charqui (chär'kē), jerked beef, the Chilean name of which the English term is a corruption.

Charr. See *Char.*

Charras (char'ras), a resinous substance which exudes from the Indian hemp and is collected for use as a narcotic or intoxicant, forming a considerable article of trade in Asia.

Chart, a hydrographical or marine map, that is a draught or projection of some part of the earth's surface, with the coasts, islands, rocks, banks, channels, or entrances into harbors, rivers, and bays, the points of compass, soundings, or depth of water, etc., to regulate the courses of ships in their voyages. The term *chart* is applied to a marine map; *map* is applied to a draught of some portion of land (often including sea also). And *plane chart* is one in which the meridians are supposed parallel to each other, the parallels of latitude at equal distances, and of course the degrees of latitude and longitude everywhere equal to each other. A great number of excellent charts are produced by the hydrographic department of the British admiralty and are sold at a low rate. The United States Coast Survey Department produces similar charts. See *Map.*

Charter (chär'ter), a written instrument, executed with usual forms, given as evidence of a grant, contract, or other important transaction between man and man. *Royal charters* are such as are granted by sovereigns to convey certain rights and privileges to their subjects, such as the Great Charter, granted by King John (see *Magna Charta*), and charters granted by various sovereigns to boroughs and municipal bodies, to universities and colleges, or to colonies and foreign possessions; somewhat similar to which are charters granted by the state or legislature to banks and other companies or associations, etc.

Charterhouse, the English name for a religious house of the Carthusian order (from the French *Maison Chartreuse*). The Charterhouse, in London, now a famous school, was built in 1370, and endowed as a priory for Carthusian monks, by Sir Walter Manny. After the dissolution of the monasteries it passed through several hands till it came into the possession of Thomas Sutton (1531-1611), a rich coal merchant, who converted it into a hospital (almshouse) for eighty male pensioners and a school for forty poor boys. The school developed beyond the original plan of the founder and now ranks as one of the great schools of England. Among eminent men educated here have been Addison, Steele, John Wesley, John Leech, and Thackeray. (Consult Thackeray's *The Newcomes* for a description. In 1872 the school removed to Godalming, Surrey. The almshouse still remains in London.

Charter Oak, a historic tree that stood at Hartford, Connecticut, until 1856. According to

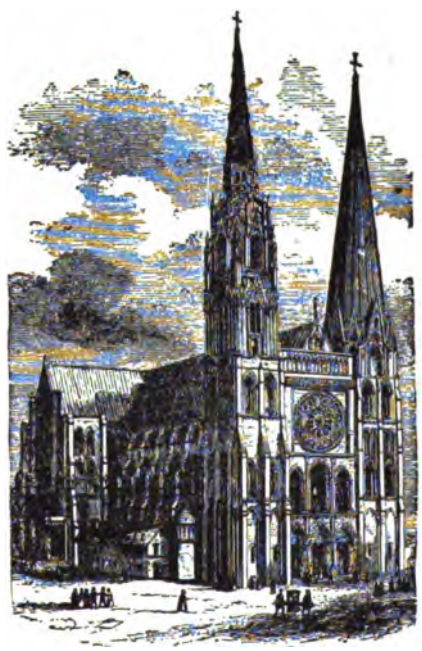
tradition, Captain Wadsworth, in 1687, hid the charter of the Colony of Connecticut in the hollow of this oak tree, when Governor Andros came from Boston to demand its surrender.

Charter-party is a contract executed by the freighter and the master or owner of a ship containing the terms upon which the ship is hired to freight. The masters and owners usually bind themselves that the goods shall be delivered (dangers of the sea excepted) in good condition. The charterer is bound to furnish the cargo at the place of lading and to take delivery at the port of discharge within specified periods called *lay days*.

Chartier (shär-tyā), ALAIN, a French poet and moralist, born, it is supposed, at Bayeux about 1386; died in 1449. His contemporaries considered him the father of French eloquence. His poems are often graceful and nervous, and his vigorous prose contains many fine thoughts and prudent maxims.

Chartism (chart'ism), CHARTISTS, name for a political movement and its supporters that formerly caused great excitement in Britain. The reform bill passed in 1832 gave political enfranchisement to the middle classes, but to the large body of the working classes it brought, primarily at least, no additional advantages, and this circumstance was turned to account by many demagogues, who urged on the people the idea that they had been betrayed by the middle classes and their interests sacrificed. A period of commercial depression and a succession of bad harvests brought discontent to a head in the Chartist movement. It was founded on the general idea that the evils under which the people were laboring were due to the misconduct of government and a defective political representation. In 1838 the famous 'Charter,' or 'People's Charter,' was prepared by a committee of six members of parliament and six working men. It comprised six heads, namely:—1. Universal suffrage, or the right of voting for every male of twenty-one years of age. 2. Equal electoral districts. 3. Vote by ballot. 4. Annual parliaments. 5. No other qualification to be necessary for members of parliament than the choice of the electors. 6. Members of parliament to be paid for their services. Immense meetings were now held throughout the country, and popular excitement mounted to the highest pitch. Physical force was advocated as the only means for obtaining satisfaction. In June, 1839, after the refusal of the House of Commons to consider a monster petition in favor of the Charter, serious riots took place. In 1848 the French revolution of February stirred all the revolutionary elements in Europe, and a great demonstration on the part of the Chartists was organized. But the preparations taken by the government for defense prevented outbreaks of any consequence, and Chartism then gradually declined. Some of the demands of the Charter have been adopted by the Liberal party and made into law; while the more advanced section of Chartism has been absorbed by Socialistic and republican movements.

Chartres (shärtr), a city of France, capital of the department Eure et-Loire, 49 miles S. W. of Paris. It is a very ancient city; a large number of the houses are built of wood and plaster, and have their gables toward the street. The cathedral, one of the most



The Cathedral, Chartres.

magnificent in Europe, is rendered conspicuous by its two spires surmounting the height on which the city stands. Manufactures: woolen, hosiery, hats, earthenware, and leather; there is a con-

siderable trade. This town was long held by the English, from whom it was taken by Dunois in 1432. Henry IV was crowned here in 1594. Pop. 19,433.

Chartreuse (shär-treuz), or GREAT CHARTREUSE, a famous Carthusian monastery in Southeastern France, a little northeast of Grenoble, situated at the foot of high mountains, 3280 feet above sea-level, the headquarters of the order of the Carthusians. It was founded in 1084, but the present building, a huge, plain-looking pile, dates from 1676. The monks of this monastery, expelled in 1903 and since then settled in Spain, manufacture the well-known liquor called *Chartreuse*.

Chartulary (char'tū-lar-i), a record or register in which the charters, title-deeds, etc., of any corporation were copied for safety and convenience of reference. They were often kept by private families.

Charybdis (ka-rib'dis), an eddy or whirlpool in the Straits of Messina, celebrated in ancient times, and regarded as the more dangerous to navigators because in endeavoring to escape it they ran the risk of being wrecked upon Scylla, a rock opposite.

Chase (chās), (1) in printing, an iron frame used to confine types when set in columns or pages. (2) The part of a gun between the trunnions and the swell of the muzzle, or in modern guns, in which the muzzle has no swell, the whole of that part of a gun which is in front of the trunnions.

Chase, or CHACE, an open piece of ground stored with wild beasts or game, and belonging to a private proprietor. It differs from a forest, which is not private property and is invested with privileges, and from a park, which is enclosed.

Chase, SALMON PORTLAND, statesman and jurist, born in New Hampshire, in 1808. Having adopted the law as his profession, he settled at Cincinnati and acquired a practise there. He early showed himself an opponent of slavery, and was the means of founding the Free-soil party, which in time gave rise to the great Republican party—the power that brought the downfall of slavery. In 1849–55 he was a member of the United States Senate, in which he vigorously opposed the extension of slavery into the new territories. In 1855 he was elected governor of Ohio, being re-elected in 1857. In 1860 he was an unsuccessful candidate for the presidency. In 1861 he was appointed secretary of the treasury in Lincoln's cabinet and in this post was signally successful in providing funds for carrying on the Civil war. In 1864 he resigned office, and was appointed chief-justice of the supreme court. He died in 1873.

Chase, WILLIAM MERRITT, an American painter, born at Franklin, Indiana, November 1, 1849. He went to Munich in 1872, joining the group of American students afterward known as Munich secessionists, who etablished the Society of American Artists in New York. He soon became noted for his brilliant paintings, especially his portraits and figure pieces. He was also active as an instructor and lecturer. He was elected a member of the National Academy, 1890.

Chasidim (*h*as'i-dēm), or PIETISTS, the name of a Jewish sect which appeared in the eighteenth century. Its adherents are strongly inclined to mysticism, depreciate the Old Testament and its ordinances, believe in extraordinary cures, etc. They are most numerous in Russian Poland, Roumania, and some parts of Galicia and Hungary, and are regarded with great antipathy by the orthodox Jews. Chasidim is also the name given to a sect which sprang up about the 2d century B.C. This party is credited with instigating the revolt of the Maccabees, and with being the parent stock of the Pharisees.

Chasing is the art of working decorative forms in low relief in gold, silver, or other metals. It is generally practised in connection with *repoussé* work, in which the figures are punched out from behind and are then sculptured on the front or *chased* with the graver.

Chassepot Rifle (shâs-pō), a breech-loading rifle, named after its inventor, and adopted as the firearm of the French infantry in 1866, but since given up. It was about 4 lbs. lighter than the needle-gun and about 1 lb. lighter than the Martini-Henry rifle.

Chasseurs (shâs-eur; a French word signifying 'hunters'), a name given to various sections of light infantry and cavalry in the French service.

Chastelard (shât-lär), PIERRE DE BOSCOBEL DE, a young Frenchman, celebrated for his infatuated passion for Mary, Queen of Scots, was born 1540 in Dauphiné. He was of good family, handsome, with a turn for verse-making. He fell madly in love with Mary Stuart at the court of Francis II, followed her to Scotland, and twice invaded the royal bedchamber while Mary was being undressed by her maids. He was tried publicly at St. Andrews and hanged (1563), the queen resisting all

appeals for pardon. She is said to have encouraged his passion more than was consistent with prudence.

Chasuble (chas'ū-bl), the upper garment worn by a priest during the celebration of mass. It was originally circular, had a hole in the middle for the head, but no holes for the arms. In later times the sides were

A B

A, Ancient form of Chasuble: 1, Apparel of the neck. 2, 2, 2, 2, Chasuble. 3, 3, Orphreys of the chasuble. 4, The stole. 5, 5, The alb. 6, Apparel of the alb. 7, The maniple.
B, Modern form of Chasuble.

cut away to give a freer motion to the arms, and it has now become an oblong garment hanging down before and behind, made of rich materials, as silk, velvet, cloth of gold, and has a cross embroidered on the back.

Chat (chat), the popular name of birds of the genus *Saxicŏla*, family Sylviadæ or warblers. They are small, lively birds, moving incessantly and rapidly about in pursuit of the insects on which they chiefly live. There are three species found in Britain, the stone-chat, whin-chat, and wheatear. The yellow-breasted chat of the United States is a larger bird, belonging to the genus *Icteria* (*I. polyglotta*), family Turdidæ or thrushes.

Château (shä-tō), the French term for a castle or mansion in the country; a country-seat.—*Château en Espagne*, literally, a castle in Spain; figuratively a castle in the air, an imaginary palace: a phrase of doubtful origin.

Châteaubriand (shä-tō-bri-äṇ), François Auguste, Vicomte de, a celebrated French author and politician, was born at St. Malo, in Brittany, of a noble family, September 14, 1768. After serving in the navy and the army he traveled in North America; but the news of the flight of Louis XVI and his arrest at Varennes brought him back to France. Shortly after he quitted France and joined with other emigrants the Prussian army on the Rhine. After being wounded at the siege of Thionville and suffering many miseries, he made his way to London, where, friendless and penniless, he was just able to earn a subsistence by giving lessons in French and doing translations. Here he published in 1797 his *Essai Historique*, which met with but small success. At this time the death of his mother and the accounts of her last moments transmitted to him by his sister helped to effect a certain change in the religious opinions of Châteaubriand, and from a not very profound skeptic he became a not very profound believer. In 1800 he returned to France, and in the following year published his romance of *Atala*, the scene of which is laid in America, and the year after his celebrated work, *Le Génie du Christianisme*, which is a kind of brilliant picture of Christianity in an æsthetic and romantic aspect. Style, power of description, and eloquence are the merits of the book rather than any depth of thought; but it carried the author's reputation far and wide, and contributed much to the religious reaction of the time. After a short career as diplomatist under Napoleon, Châteaubriand made a tour in the East (1806–7), visiting Greece, Asia Minor, and the Holy Land. As the fruit of his travels he published *Les Martyrs* (1809) and *Itinéraire de Paris à Jérusalem* (1811). He hailed the restoration of Louis XVIII with enthusiasm, was appointed ambassador to Berlin, and then to London, but in 1824 quarreled with the premier, M. de Villèle, and was summarily dismissed. On the revolution of 1830 he refused to take the oath of allegiance to Louis Philippe, forfeiting thus a pension of 12,000 francs. At this time his writings were chiefly political, and mostly appeared as newspaper articles, pamphlets, etc. In his later years he wrote several works, but none of the value of his earlier productions. He died 4th July, 1848, leaving memoirs (*Mémoires d'outre Tombe*) which contain severe judgments on contemporary men and things.

Châteaudun (shä-tō-dūṇ), a town of France, dep. Eure-et-Loire, 26 miles s. s. w. of Chartres, near the Loire. The old castle of the

counts of Dunois overlooks the town. Pop. 7296.

Châteauroux (shä-tō-rō), a town of France, capital of the Department of Indre. Pop. 26,100.

Château-Thierry (shä-tō-tyar-re), a town in the Department of Aisne, France, on the right bank of the Marne, 59 miles N. E. of Paris; originally a Roman camp (*Castrum Theodorici*). Here La Fontaine was born. It was captured by the English in 1421, by Charles V in 1545, and by the Spaniards in 1591. Here, in 1814, Napoleon defeated Blucher. Pop. 7770.

Château-Thierry and its vicinity was the scene of much severe fighting during the World war, especially in 1918, when the third great German offensive of the year was launched, on May 27, by the Crown Prince, from the Chemin-des-Dames, with Paris as the objective.

In three days the French were swept from the Aisne, southward across the Vesle and the Ourcq, down to the banks of the Marne. The direction of this attack was towards Château-Thierry, where the Germans expected to cross the Marne, and by 4 P. M., May 31, their advance troops reached the bridges into that city. The Germans were halted here by French troops and the 7th Machine Gun Battalion of the 3d American Division. This Machine Gun Battalion, after a twenty-four-hour march of one hundred and ten kilometers was the first of the American troops to actually participate in the defense of Château-Thierry itself.

The fighting in the Marne salient thus began on May 27, and before Château-Thierry was finally relieved (August 6), seventy-two days of combat of varied intensity had engaged the Americans and their allies. During these seventy-two days of combat, four separate and distinct battles took place and have since been designated as major operations.

(1) *Aisne Defensive:* Chemin-des-Dames and northeast of Rheims, between May 27 and June 5. This constituted the first phase of the third German offensive in 1918, and it reached Château-Thierry and vicinity, where it was halted. The 3d American Division (regulars) participated at Château-Thierry and along the Marne to the east. The 2d American Division (regulars and marines) participated to the southwest and west of Château-Thierry.

(2) *Montdidier-Noyon Defensive:* Between June 9 and 15, the Germans attempted to widen the Marne salient to the west, and the 1st Division (regulars) was in the defensive line and assisted in stopping the German attempt.

From June 5 to July 15, the 2d American Division made local advances, the 9th and 23d Infantry taking the town of Vaux, and the marines finally clearing up Belleau Wood.

(3) *Champagne-Marne Defensive—July 15 to 18:* The last phase of the Second Battle of the Marne. The Germans attacked across the Marne and were stopped by the French and two American divisions, the 3d and the 28th (east of Château-Thierry). At the same time the 42d American Division, operating under the 4th French Army, east of Rheims, participated in that locality.

(4) *Aisne-Marne Offensive—July 18 to August 6:* The Allied offensive or counter stroke at the Soissons-Château-Thierry-Rheims salient, just southwest of Soissons, by the 1st and 2d American divisions and 1st Moroccan Division (French). The Germans were forced to retreat from the west leg of the salient, being driven back day by day by the divisions above named, including the 26th Division; and from the south and east by the 3d, 4th, 28th, 32d, 42d and 77th American divisions.

Châtelet (shät-lā), a manufacturing town of Belgium, prov. of Hainaut, in the Sambre. Pop. 11,867.

Châtellerault (shä-tel-rō), a town of France, department Vienne, 20 miles N. N. E. of Poitiers, on the Vienne. Pop. 18,260.

Chatham (chat'am), a town, naval arsenal, and seaport of England, County Kent, on the Medway, about 34½ miles by rail from London, adjoining Rochester so closely as to form one town with it. The importance of Chatham is due to the naval and military establishments at Brompton in its immediate vicinity. The royal dockyard was founded by Queen Elizabeth previous to the sailing of the Armada. It has been greatly enlarged in recent years. The military establishments include extensive barracks, arsenal, and park of artillery, hospital, storehouses and magazines, etc. The town is defended by a strong line of fortifications. Pop. (1920) 47,000.

Chatham, a town of Canada, prov. Ontario, on the river Thames, 45 miles E. of Detroit, Mich., with water communication with the Great Lakes. There are manufactures of machinery, iron and steel castings, woolens, automobiles, motor trucks, agricultural implements, etc. Pop. 16,000.

Chatham, a town of New Brunswick, on the Miramichi. It has a fine harbor. Lumber and fish are the chief industries. Pop. 6100.

Chatham, WILLIAM PITT, EARL OF, one of the most illustrious statesmen of Britain, the son of Robert Pitt of Boconnoc, in Cornwall.

born Nov. 15, 1708, and educated at Eton and Oxford. He entered parliament as member for the borough of Old Sarum (which was the property of his family), and soon attracted notice as a powerful opponent of Walpole. In spite of the king's dislike Pitt was powerful enough to win a place in the administration (1746), first as vice-treasurer of Ireland, and afterwards as paymaster-general. In 1756 he became secretary of state and real head of the government. Dismissed in 1757 on account of his opposition to the king's Hanoverian policy, no stable administration could be formed without him, and he returned to power the same year in conjunction with the Duke of Newcastle. It was under this administration and entirely under the inspiration of Pitt that Britain rose to a place among the nations she had not before occupied. Wolfe and Clive, both stimulated and supported in their great designs by Pitt, won Canada and India from the French and the support the Great Commoner gave Frederick of Prussia contributed not a little to the destruction of French predominance in Europe. The accession of George III brought Lord Bute into power, and Pitt, disagreeing with Bute, resigned in 1761. In 1766 he strongly advocated conciliatory measures towards the American colonies, and undertook the same year to form an administration, he going to the House of Lords as Earl of Chatham. But the ministry was not a success, and in 1768 he resigned. After this his principal work was his appeals for a conciliatory policy towards the colonies. But his advice was disregarded, and the colonies declared themselves independent in 1776. Chatham died May 11, 1778. He received a public funeral and a magnificent monument in Westminster Abbey. The character of Chatham was marked by integrity, disinterestedness, and patriotism. With great oratorical gifts and the insight of a great statesman he had liberal and elevated sentiments; but he was haughty and showed too marked a consciousness of his own superiority.

Chatham Islands, a group of three islands in the South Pacific Ocean, belonging to New Zealand. The largest, or Chatham Island, lat. (s. point) 44° 7′ S.; long. 176° 49′ W., about 350 miles E. from New Zealand, and is about 38 miles long and 25 broad. Pitt Island is much smaller, and Rangatira is an insignificant patch. A considerable portion of Chatham Island is occupied by a salt lagoon. The soil is in many places fertile, and crops of potatoes, wheat, and vegetables are successfully grown. Cattle and sheep are reared, and thus whaling or other vessels that call are supplied with fresh provisions as well as with water. The original inhabitants, called Morioris, differed considerably from the Maoris, by whom and a mixed race they have been supplanted. The present population amounts to only 420. The islands were discovered in 1791.

Chati (chä'tē), a species of small leopard found in South America, very destructive to small quadrupeds and birds, and especially to poultry-yards, but so gentle, when domesticated, as to have gained for itself the name of *Felis mitis*, or gentle leopard.

Châtillon-sur-Seine (shä-tē-yŏn-sür-sen), a town of France, department of Côte d'Or, 45 miles N.W. of Dijon, on the Seine. It is chiefly notable for the congress of the allied powers and France held here in 1814. Pop. 4430.

Chat Moss, an extensive morass, area about 6000 to 7000 acres, situate chiefly in the parish of Eccles, Lancashire. It is remarkable as being the scene of operations for reclaiming bog-lands, at first successfully carried out on a large scale at the end of the eighteenth and beginning of the nineteenth century;—also for offering one more field of triumph to George Stephenson, who in 1829 carried the Liverpool and Manchester Railway over it after all other engineers had declared the feat impossible.

Chatoyant (sha-tol'ant), a term applied to gems that have, when cut and polished, a changeable, undulating luster like that of a cat's eye in the dark.

Châtre (shä-tr), La, an old town of France dep. Indre, 21 miles S.E. of Châteauroux, right bank of the Indre. Pop. about 5000.

Chatsworth (chats'worth), an estate of the Dukes of Devonshire, in Derbyshire, purchased in the reign of Elizabeth by William Cavendish, who began the building of a hall which served as one of the prisons of Mary, Queen of Scots. The present building was nearly completed by the first Duke of Devonshire between 1687 and 1706, the north wing being added by the sixth duke. It forms a square, with an inner court, and is remarkable for the collections of pictures and statues it contains. The façade is 720 feet long, or with the terraces 1200 feet. The park is about 11 miles in circumference, di-

versified by hill and dale. The conservatory covers nearly an acre, and was designed by Paxton, forming on a small scale the forerunner of the exhibition building of 1851.

Chattahoochee (chat-a-hŏ'chē), a river of the United States, rising in the Appalachian Mountains in Georgia, and forming for a considerable distance the boundary between Georgia and Alabama. In its lower course, after the junction of the Flint River, it is named the Appalachicola, and is navigable to Columbus in Georgia for steamboats. Total course, about 550 miles.

Chattanooga (chat-a-nŏ'ga), a city, capital of Hamilton Co., Tennessee, on the Tennessee River, near the Georgia boundary, an important center of trade and manufactures, its industries including iron works on a large scale, textile mills, car, wagon and carriage factories, implement works, stove works, furniture factories, boiler works, structural steel works, tanneries, etc., while it has an extensive trade in cotton, coal, iron and wheat. There is available 150,000 hydro-electric horsepower. During the Civil War, in Nov., 1863, the Confederates here suffered a great defeat after three battles, known as Lookout Mountain, Chickamauga and Missionary Ridge. Pop. (1910) 44,604; (1920) 57,895.

Chattels (chat'els), property movable and immovable, not being freehold. The word *chattel* is originally the same work with *cattle*, formed from late Latin *capitalia*, meaning heads of cattle, from L. *caput*, head. Chattels are divided into real and personal. Chattels *real* are such as belong not to the person immediately, but dependent upon something, as an interest in a land or tenement, or a lease, or an interest in advowsons. Chattels *personal* are goods which belong immediately to the person of the owner.

Chatterers (chat'er-ers), the popular name of certain insessorial birds of the family Ampelidæ, genus *Ampĕlis*), as the Bohemian chatterer or waxwing (*Ampĕlis garrŭla*) and the chatterer of Carolina (*A. cedrŏrum*).

Chatterton (chat'er-ton), THOMAS, a youth whose genius and melancholy fate have gained him much celebrity, was born at Bristol in 1752, of poor parents, and educated at the charity school. He exhibited great precocity, became extremely devoted to reading, and was especially fond of old writings and documents. At the age of fourteen he was apprenticed to an attorney. In 1768, when the new bridge at Bristol was completed, he inserted a paper in the *Bristol Journal* entitled *A Description of the Friars' First Passing over the Old Bridge*, which he pretended he had found along with other old manuscripts in an old chest in St. Mary Redcliffe Church, Bristol. He also showed his friends several poems of similarly spurious antiquity which he attributed to one Rowley. In 1769 he ventured to write to Horace Walpole, then engaged upon his *Anecdotes of Painters*, giving him an account of a number of old Bristol painters which was clever enough to deceive Walpole for a time. Dismissed from the attorney's office, he left with his manuscripts for London, where a favorable reception from the booksellers gave him high hopes. For them he wrote numerous pamphlets, satires, letters, etc., but got no substantial return, and his situation became daily more desperate. At last, after having been several days without food, he poisoned himself, 25th August, 1770. The most remarkable of his poems are those published under the name of Rowley, spurious antiques, such as *The Tragedy of Ælla*, *The Battle of Hastings*, *The Bristow Tragedy*, etc.

Chatterton's Compound, a mixture of Stockholm tar, resin, and gutta percha, used in the construction of submarine telegraph cables, etc.

Chaucer (chą'sèr), GEOFFREY, 'the father of English poetry,' born in London probably about 1340, and not in 1328, the date formerly given;

Geoffrey Chaucer

died there on the 25th of October, 1400. He was the son of a vintner named

John Chaucer. Nothing is known of his education, but in 1356–59 he was a page to Princess Lionel. He tells us himself that in 1359 he bore arms in France and was taken prisoner. He was ransomed next year, the king paying £16 towards the necessary sum. In 1367 we find his name as a valet of the king's chamber. Whether he married his wife Philippa in 1366 or not till 1374, and who she was, we do not know for certain. In 1367 he received a pension of twenty marks, and between 1370 and 1380 he was employed abroad in seven diplomatic missions. In one of these, in 1372, he was sent to Genoa as a commissioner to negotiate a commercial treaty. It is probable that he visited the Italian poet Petrarch on this occasion. In 1374 he was appointed comptroller of the customs on wool at London, a lucrative post, and he also received an annual allowance. In 1377 he was sent to Flanders and France on diplomatic business, and next year to Lombardy. In 1382 he was appointed comptroller of the petty customs. In 1386 he was returned to parliament as knight of the shire for Kent, but in the same year he shared the disgrace of his patron, John of Gaunt, was dismissed from his comptrollership, and reduced to a state of comparative poverty. Three years later, however, he was made clerk of the works at 2*s.* a day, and afterwards had other offices and one or two annuities bestowed upon him, but in 1394–98 he must have been quite poor. In 1399 he got a pension of forty marks from Henry IV, but did not live long to enjoy it. His most celebrated work, *The Canterbury Tales*, was written at different periods between 1373 and 1400. It consists of a series of tales in verse (two in prose), supposed to be told by a company of pilgrims to the shrine of St. Thomas (Becket) at Canterbury in 1386. In its pages we get such pictures of English life and English ways of thought in the 14th century as are found nowhere else, while it displays poetical skill and taste of a high grade. Besides this brilliant production Chaucer wrote many poems (and others are falsely attributed to him): *The Book of the Duchess* (1369), *The Parliament of Fowls* (1374), *Troilus and Cressida* (1380–82), *The Legend of Good Women* (1385), *The House of Fame* (1386), etc., some of which are founded on French or Italian works. He also translated Bœthius, and wrote a treatise on the Astrolabe (1391) for his son Lewis (who probably died early). He was buried in Westminster Abbey.

Chauci (chą'sē), an ancient Teutonic tribe dwelling E. of the Frisians, between the Ems and Elbe on the shore of the German Ocean.

Chaudes-Aigues (shōd-āg), a village of France, department of Cantal, 28 miles E.S.E. of Aurillac, with thermal springs so copious that the water is used for warming the town in winter and for washing fleeces. Pop. (commune) 1558.

Chaudet (shō-dā), ANTOINE DENIS, a French sculptor, born at Paris in 1763; died there in 1810. His first work was a bas-relief under the peristyle of the Pantheon, representing the love of glory, an excellent work, the very simplicity and grandeur of which prevented it being justly estimated by the false taste of the age. In the museums of the Luxembourg and Trianon are several of Chaudet's finest works: *La Sensibilité*, the beautiful statue of *Cyparissa*, etc.

Chaudière (shōd-yār), a river of Canada, Quebec province, which rises on the borders of Maine, near the sources of the Kennebec, and flows into the St. Lawrence about 6 miles above Quebec. The banks of the river are generally steep and rocky, and about three miles above its junction with the St. Lawrence are the Chaudière Falls, about 120 feet high. On the Ottawa river are other two falls of lesser dimensions known as the Great and the Little Chaudière.

Chauffeur (shō-fêr; French for stoker or fireman), the driver operating an automobile and the mechanic carried to look after its machinery and fuel, these being usually combined in one person. See *Automobile*.

Chaulmugra (shäl'mū-gra), a tree (*Gynocardia odorāta*) of S. Asia, from the seeds of which an oil is obtained that has long been known and highly valued in India and China as a remedy in skin diseases and complaints arising from blood impurities, and has been introduced into western countries in the treatment both of skin and chest diseases.

Chaumont (shō-mōṇ), a town of France, capital of the department of Haute-Marne, on a height between the Marne and the Suize, with manufactures in woolens, hosiery, etc. Here the allies (Great Britain, Russia, Austria, and Prussia) signed the treaty of alliance against Napoleon, March 1, 1814. Pop. 12,089.

Chaumontelle (shō-mon-tel'), a delicious dessert pear

which is much grown in Jersey, Guernsey, and the south of England.

Chauny (shō'nē), a town of France, dep. Aisne, 22 miles W. of Laon. It was the scene of much fighting during the European war. It was captured by the Germans in the first drive on Paris in August, 1914, retaken by the Allies in 1917, and fell again into German hands in March, 1918. It had extensive cotton mills, bleaching grounds and tanneries, and manufactures of sacking, soda, sulphuric and nitric acids. Pop. (1914) 10,127.

Chausses (shōs), the tight covering for the legs and body, reaching to the waist, formerly worn by men of nearly all classes throughout Europe. They resembled tight pantaloons with feet to them. The name *chausses de mailles* was given to defensive armor worn on the same parts of the body.

Chautauqua (chȧ-tą'kwȧ), a beautiful lake in New York, 18 miles long and 1-3 broad, 726 feet above Lake Erie, from which it is 8 m. distant. On its banks is the village of Chautauqua, the center of a religious and educational movement of some interest. This originated in 1874, when the village was selected as a summer place of meeting for all interested in Sunday schools and missions. Since then the Chautauqua Literary and Scientific Circle has taken origin here, the most prominent feature of which is to engage the members—wherever they may reside—in a regular and systematic course of reading, extending, when completed over four years and entitling the student to a diploma. There are many local branches or societies.

Chauvinism (shō'vin-izm), an unreflecting and fanatical devotion to any cause, especially an exaggerated patriotism, so called from *Nicholas Chauvin*, a soldier so enthusiastically devoted to Napoleon I and so demonstrative in his adoration that his comrades turned him into ridicule.

Chaux-de-Fonds (shōd-fōn), La, a town of Switzerland, in the canton and 9 miles N.W. of the town of Neufchâtel, in a deep valley of the Jura. The inhabitants are largely engaged in the making of watches and clocks, of which Chaux-de-Fonds and Locle are the chief centers in Switzerland, and in similar branches of industry. Pop. 36,388.

Chavica (chav'i-ka), a genus of plants, nat. order Piperaceæ, including the common long pepper, Java long pepper, and betel-pepper.

Chay-root (shā), the roots of a small biennial plant of India, the *Oldenlandia umbellata*, growing spontaneously on dry, sandy ground near the sea; and extensively cultivated, chiefly on the Coromandel coast. It yields a red dye used in coloring chintz.

Cheboygan (shē-boi'gan), a city, county seat of Cheboygan Co., Michigan, on Lake Huron. It has paper and pulp mills, tanneries, canneries, and manufactures of wood products, boilers, cigars, flour, etc., with extensive lumber and farm interests. Pop. (1920) 5642.

Check. See *Cheque*.

Checkers (chek'ers), the common name in the United States for the game of draughts (which see).

Checkmate (chek'māt). See *Chess*.

Cheddar (ched'ar), a parish and thriving village, England, County Somerset, 18 miles S.W. Bristol. The dairies in the neighborhood have long been famous for the excellence of their cheese, which is made from the whole milk, and the whey skimmed off, heated, and added to the curd.

Cheduba (che-dō'ba), an island in the Bay of Bengal, belonging to Burmah, about 25 miles off the coast of Arracan; length and breadth, each about 15 miles; area, nearly 250 square miles; pop. about 25,000. The soil is fertile and produces tobacco, rice, indigo, pepper, etc. Petroleum is also found.

Cheese (chēs), one of the important products of the dairy, is composed principally of *casein*, which exists in cows' milk to the extent of about 3 or 4 per cent., fat, and water. It is made from milk, skimmed wholly, partially, or not at all, the milk being curdled or coagulated, and the watery portion or whey separated from the insoluble curd, which being then worked into a uniform mass, salted (as a rule), and pressed into a vat or mold forms cheese, but requires to be *cured* or *ripened* for a time before being used. The coagulation of the milk may be effected either by adding an acid as in Holland, or sour milk as in Switzerland, or rennet as usual in Britain and America. There are a great many varieties of cheese, of which the most notable are Stilton, Cheshire, Cheddar, Dunlop, amongst British; and Parmesan, Gruyère, Gorgonzola, Gouda, Roquefort, Limburg, etc., amongst European ones. (See different articles.) In America immense quantities of cheese are made,

almost all the different European kinds being imitated. Large factories are there devoted to the manufacture. Other kinds are known as sour-milk, skimmed-milk, cream, sweet-milk, etc., cheese. Sheep's and goats' milk cheese are also made.

Cheesefly, a small, black, dipterous insect bred in cheese, the *Piophila casei*, of the same family to which the housefly, blowfly, etc., belong. It has a very extensible ovipositor which it can sink to a great depth in the cracks of cheese, and lay its eggs there. The magot, well known as the cheesehopper, is furnished with two horny, claw-shaped mandibles, which it uses both for digging into the cheese and for moving itself, having no feet. Its leaps are performed by a jerk, first bringing itself into a circular attitude, when it can project itself twenty to thirty times its own length.

Cheesehopper. See *Cheesefly.*

Cheese-rennet, a popular name of the plant *bedstraw.*

Cheetah. Same as *Chetah.*

Che-Foo (chē'fō), a town of China in the province of Shantung, one of the last ports opened to foreign trade, which is now of considerable volume. Pop. about 35,000.

Cheilognatha (kī-log'na-tha), one of the two orders of Myriapoda, including the millipedes and other forms.

Cheilopoda (kī-lop'o-da), one of the two orders of Myriapoda, represented by the centipedes in which a pair of mandibles two pairs off maxillipeds or foot-jaws and a lower lip are developed.

Cheiranthus (kī-ran'thus), the wall-flower genus of plants.

Cheirolepis (kī-rol'e-pis), a genus of fossil ganoid fishes found in the Old Red Sandstone of Orkney and Morayshire, characterized by the great development of the pectoral and ventral fins.

Cheiromancy (kī'ro-man-si), or PALMISTRY, the art of divining by inspection of the lines of the hand; it was practised in India in the remotest ages; in Europe, during the middle ages, it was in great repute, but latterly it took refuge among the gypsies.

Cheironectes (kī-rō-nek'tēz), a genus of acanthopterygious fishes, having the pectoral fins supported, like short feet, upon peduncles by means of which they are enabled to creep over mud and sand when left dry by the receding tide, and also to take short leaps like a frog, whence the name frogfish, as well as handfish. They are found in the estuaries of the northeast of Australia.—The same name is given to a Brazilian genus of opossums, in which the hinder hands are webbed, the Yapock opossum.

Cheiropractic. See *Chiropractic.*

Cheiroptera (kī-rop't-e-ra), or BATS, an order of mammals, the essential character of which is the possession of a *patagium*, or expansion of the integument of the body which connects the tail throughout its whole length to the hinder limbs as far as the ankle, and thence passes along the side of the body to the fore-limbs, which are greatly elongated, and give support and varied movement to the expansion (which is popularly called the wing) by means of the very long and slender digits. Other mammals, as some of the squirrels and the flying lemur, have the power of gliding through the air for some distance, but none of them has the power of sustained flight, nor are the anterior extremities modified in the same way as are those of the bats. The Cheiroptera are divided into two sub-orders, *Frugivŏra*, or Fruit-eaters, and *Insectivŏra*, or Insect-eaters. (See *Bat.*)

Skeleton and Wing-Membranes of Noctule Bat.

Cheirotherium (kī-rō-thē'ri-um), a name given to a great unknown animal that formed the larger footsteps upon the slabs of the Trias, or upper New Red Sandstone, and which bear a resemblance to the human hand. It is supposed to be identical with the labyrinthodon.

Cheke (chēk), SIR JOHN, an English scholar, born at Cambridge in 1514; educated at St. John's College, and made regius professor of Greek. In 1544 he was appointed tutor to the future Edward VI, and he became secretary of state in 1553, and was also privy-councillor. On the king's death he supported Lady Jane Grey, and was committed to the Tower. After a few months, however, he was set at liberty and settled at Strasburg; but his connection with the English Protestant church gave offense to the Catholics and, and his estates were

confiscated. He supported himself by teaching Greek, but in 1556, having been induced to visit Brussels, he was arrested by order of Philip II and sent prisoner to England. Under threat of the stake he recanted, and received the equivalent of his forfeited estates; but he felt so keenly his degradation that he died of grief in 1557. His chief distinction was the impulse given by him to the study of Greek.

Che-kiang (che-ke-ăng'), a maritime province of China, between lat. 27° and 31° N., and including the Chusan Archipelago; area, 36,700 sq. miles; pop. about 18,000,000. It is traversed by several rivers, and has as its principal ports Ningpo and Hangchow, the capital. Staple exports, silk and tea.

Chelmsford (chemz'ford), a county town of Essex, England, in a valley between the Chelmer and Cann, with several handsome public buildings. There are manufactories of agricultural implements, electrical appliances, etc. Pop. 21,500.

Chelmsford, a town of Middlesex Co., Massachusetts, 4 miles s. w. of Lowell, in a farming and fruit-growing district, with manufactures of woolens and worsteds, etc. Pop. (1920) 5682.

Chelmsford, SIR FREDERICK THESIGER, LORD, an eminent English lawyer, born in London in 1794; died in 1878; entered parliament in 1840; was solicitor-general and attorney-general under Sir Robert Peel, was appointed lord chancellor of England in 1858 and made Lord Chelmsford; was appointed lord chancellor again in 1866.—His son, the second Lord Chelmsford (FREDERICK AUGUSTUS THESIGER), born in 1827; died in 1905; was educated at Eton, and served in the Crimea and through the Indian mutiny. As deputy adjutant-general he served in the Abyssinian campaign, was nominated C.B., made aide-de-camp to her Majesty, and adjutant-general to the forces in India (1868–76), and in 1877 was appointed commander of the forces and lieutenant-governor of Cape Colony. He restored Kaffraria to tranquillity, and was given the chief command in the Zulu war of 1879. After great difficulties with the transport, and some disasters, he gained the decisive victory of Ulundi, before the arrival of Sir Garnet Wolseley, who had been sent to supersede him. On his return to England he was made G.C.B., and in 1884 became Lieutenant of the Tower. Promoted lieutenant-general in 1882 and general in 1888, he was placed on the retired list in 1893.

Chelonians (ke-lō'ni-ans), or CHELONIA, an order of reptiles including the tortoises and turtles, and distinguished by the body being inclosed in a double shell, out of which the head, tail, and four legs protrude. The order is divided into five families: the Chelididæ, or frog-tortoises; Testudinidæ, or land-tortoises; Emydæ, the terrapins or fresh-water tortoises; Trionychidæ, the mud-turtles or soft-tortoises; Chelonidæ, or sea-turtles. See *Tortoise, Turtle.*

Chelsea (chel'sē), a suburb of London, and a parliamentary borough, on the Thames, opposite Battersea, and chiefly distinguished for containing a royal military hospital, originally commenced by James I as a theological college, but converted by Charles II into an asylum for the reception of sick, maimed, and superannuated soldiers. The building was finished in 1692 by Sir Christopher Wren. Connected with the hospital is a royal military asylum, founded in 1801, for the education and maintenance of soldiers' children. Pop. 66,404.

Chelsea, a city of Massachusetts, forming a N. E. suburb of Boston. (See *Boston.*) Pop. 43,184.

Cheltenham (chel'tn-am), a municipal and parliamentary borough and fashionable watering-place in England, in the county of Gloucester, on the small river Chelt, within the shelter of the Cotswold Hills. The town has fine squares, crescents, terraces, gardens and drives, assembly-rooms, theater, etc., and has become especially distinguished as an educational center. Pop. 48,944.

Chemiotherapeutics (kem-i-o-ther-a-pū'tiks), the science which deals with the treatment of disease by the application of chemical principles. Its aim is the cure of disease by rationalized chemical principles founded on the results of exact chemical research. In the past new remedies were discovered largely by accident. The chemiotherapists go to work with laboratory methods to find the chemical that will kill the parasite causing the disease without killing the patient. Such is the method which gave the world one of the greatest therapeutic discoveries since vaccination—salvarsan (which see).

Chemistry (kem'is-tri), the science which treats of the composition and changes of matter. Chemistry had its origin in alchemy (q. v.). The two chief aims of the alchemists were to change the base metals into gold and to prolong human life. Paracelsus (1493-

1541) asserted that sulphur, mercury, and salt, substances regarded by the alchemists as elementary, were present not only in inanimate objects but also in living organisms. Upon this belief he built up a system of medical theory which is known as iatrochemistry (literally medical chemistry). The influence of the alchemists and of Paracelsus continued to be predominant until the time of Robert Boyle (1626-1691), who stated that all matter was made up of very minute particles. He learned experimentally that a substance after burning increased in weight. But Boyle's correct observation upon the theory of combustion was disregarded by Stahl (1660-1734), who asserted that all inflammable bodies contained a principle which he called phlogiston. Stahl and his adherents regarded phlogiston as a hypothetical element, a pure fire. The doctrine of phlogiston was tenaciously supported by most of the great chemists of the second half of the 18th century until Laviosier, in 1783, declared that a body in burning merely combined with oxygen. Oxygen had been discovered by Joseph Priestly in 1774. During the phlogiston controversy, and prior to that time, investigations had been made upon the proportions by weight in which various elementary substances combined. Much of this work was prompted by the disputes centering about phlogiston. In 1803 the results of these investigations were collected and published in tabular form by John Dalton. This list Dalton called a table of atomic weights of the elements. Undoubtedly Dalton had in mind the same idea concerning the term atomic weight as it implies at the present time; that is, the relative weight compared with the weight of hydrogen or of oxygen, in which the smallest possible division of a substance can enter into chemical combination. Berzelius (1779-1849), the founder of our present chemical system and at that time recognized as the greatest authority on chemical subjects, accepted Dalton's views, but at the same time realized the inaccuracies in the latter's tables. Because he appreciated the necessity for accurate atomic weights if chemistry were to advance, Berzilius subsequently determined the weights of hundreds of compounds as well as the atomic weights of many of the elements by excellent analytical methods.

Atomic and Molecular Weights.—For many years following the publication of Dalton's tables there was much confusion and controversy regarding the number of atoms of a substance which would combine with an atom of another substance. Cannizzaro, in 1858, removed this difficulty by pointing out that chemists had failed to distinguish between atomic weights of the elements and the sum of the atomic weights of the same or different elements when joined together to form a definite chemical compound. For this sum of the atomic weights in chemical compounds Cannizzaro proposed the term molecular weight (q. v.). The term atomic weight has since been applied only to the weight of the free elements uncombined with atoms of other elements or even of the same element. The term molecular weight has referred only to the smallest possible division of a chemical compound made up of two or more atoms of the same or, more frequently, of different elements. The atomic weight of an element is derived from two previously determined chemical constants; the amount of the element which combines with a known weight of oxygen or its equivalent and the molecular weights of the compounds which the element forms (see *Molecular Weight*). Because hydrogen was the lightest element known, to it was arbitrarily assigned the atomic weight one.

The Elements.—At the present time eighty-three elements have been definitely isolated and their atomic weights determined. This number is exclusive of those elements which are the degeneration products of the radio active elements (see *Radioactivity*). In the following list antimony, arsenic, boron, copper, gold, lead, manganese, mercury, silver, sulphur, tin, and zinc were known to the alchemists and most of them to the ancients. Several of the elements, such as oxygen, hydrogen, nitrogen, magnesium, and chromium, were discovered prior to the year 1800. The following table contains the names of the elements, the symbols for each element, and the atomic weight for each element revised to 1921:

Aluminum	Al	27.1
Antimony	Sb	120.2
Argon	A	39.9
Arsenic	As	74.96
Barium	Ba	137.37
Bismuth	Bi	208.0
Boron	B	10.9
Bromine	Br	79.92
Cadmium	Cd	112.40
Calcium	Ca	40.07
Carbon	C	12.005
Cerium	Ce	140.25
Cesium	Cs	132.81
Chlorine	Cl	35.46
Chromium	Cr	52.0
Cobalt	Co	58.97
Columbium	Cb	93.1
Copper	Cu	63.57
Dysprosium	Dy	162.5
Erbium	Er	167.7
Europium	Eu	152.0
Fluorine	F	19.0
Gadolinium	Gd	157.3
Gallium	Ga	70.1
Germanium	Ge	72.5

Glucinum	Gl	9.1
Gold	Au	197.2
Helium	He	4.00
Holmium	Ho	163.5
Hydrogen	H	1.008
Indium	In	114.8
Iodine	I	126.92
Iridium	Ir	193.1
Iron	Fe	55.84
Krypton	Kr	82.92
Lanthanum	La	139.0
Lead	Pb	207.20
Lithium	Li	6.94
Lutecium	Lu	175.0
Magnesium	Mg	24.32
Manganese	Mn	54.93
Mercury	Hg	200.6
Molybdenum	Mo	96.0
Neodymium	Nd	144.3
Neon	Ne	20.2
Nickel	Ni	58.68
Niton	Nt	222.4
Nitrogen	N	14.008
Osmium	Os	190.9
Oxygen	O	16.00
Palladium	Pd	106.7
Phosphorous	P	31.04
Platinum	Pt	195.2
Potassium	K	39.10
Praseodymium	Pr	140.9
Radium	Ra	226.0
Rhodium	Rh	102.9
Rubidium	Rb	85.45
Ruthenium	Ru	101.7
Samarium	Sa	150.4
Scandium	Sc	45.1
Selenium	Se	79.2
Silicon	Si	28.3
Silver	Ag	107.88
Sodium	Na	23.00
Strontium	Sr	87.63
Sulphur	S	32.06
Tantalum	Ta	181.5
Tellurium	Te	127.5
Terbium	Tb	159.2
Thallium	Tl	204.0
Thorium	Th	232.15
Thulium	Tm	168.5
Tin	Sn	118.7
Titanium	Ti	48.1
Tungsten	W	184.0
Uranium	U	238.2
Vanadium	V	51.0
Xenon	Xe	130.2
Ytterbium	Yb	173.5
Yttrium	Yt	89.33
Zinc	Zn	65.37
Zirconium	Zr	90.6

Symbols and Occurrence of the Elements.—The symbols for the elements known to the ancients and to the alchemists, were derived from the Latin word for the element by combining the first letter of the Latin word with another letter of the same word. Thus the symbol for iron, Fe, came from the Latin word ferrum; Pb, the symbol for lead, similarly was derived from plumbum. The symbols of the elements discovered in more recent times almost invariably owe their origin to the first letter and sometimes one other letter of the English word for the element. The names of the elements themselves come from many different sources. The names of the elements known to the ancients are veiled in the obscurity of centuries; the more recently discovered elements frequently take their names from some striking property of the element. Oxygen, for example, means acid-forming, while chromium is an adaptation of the Greek word colored. Other elements are named after the locality in which they were first found, such as yttria. A few elements are named after mythological characters, as vanadium and thorium. Of the eighty-three elements known only eight are found in the earth's crust in relatively large amounts. Oxygen is by far the most common; it constitutes almost one-half of the earth's crust. By weight one-fifth of the air is oxygen, and oxygen constitutes about 89 per cent by weight of water. Next to oxygen in the order of their relative amounts found in the earth's crust are silicon, aluminum, iron, calcium, potassium, sodium, and magnesium. All the other elements are found in amounts which are expressed in fractions of a per cent of the total material present.

Valency and Laws of Combination.—The elements are divided into two classes, the metals and the non-metals. Metals form what chemists call bases, while non-metals are acid-forming. Both groups of elements enter into salts. Dalton early formulated the laws according to which these two classes of the elements entered into chemical combination; the proportion by weight of the combining elements is always unvarying in the same compound, and if two elements formed a series of compounds the combining proportions are simple multiples of the lowest ratio. To illustrate the last law we have 32 parts by weight of sulphur combining with 32 parts by weight of oxygen to form sulphur dioxide; but in another compound of sulphur and oxygen, 32 parts of the former unite with 48 parts of the latter. Thus the ratio of the oxygen in its two sulphur compounds is as 32 to 48 or 2 as to 3. The sum of the elements forming a chemical compound always equals the weight of the compound itself. Chemistry as an exact science is based upon these laws of combination. The joining of atoms to form molecules is attributed to what is called chemical affinity. The degree of chemical affinity varies widely with the atoms of the different elements: oxygen combines with all of the elements except fluorine and the inert gases of the atmosphere, while the latter combine with no elements whatsoever. A list of the inert gases is in group 'O' of Mendeleeff's table below. Furthermore, the number of atoms with which a given atom may combine sometimes varies. The combining power

of the atom is called its valency. Hydrogen is one of the elements which has the least chemical combining power, and to it therefore is assigned the valency one. The combining value for hydrogen or its equivalent is the standard unit of valency. Oxygen always has a valency of two and aluminum of three, but nitrogen may have a valency of one, two, three, four, or five.

Formulas.—To represent molecules of various materials the symbols of the elements forming the molecules are written in juxtaposition. Symbols written in this way constitute a formula. Thus to represent water we have H_2O. This formula indicates that two atoms of hydrogen unite with one atom of oxygen to form one molecule of water. The formula for sulphuric acid is H_2SO_4, from which, by reference to the table of atomic weights its actual molecular weight may be calculated; for not only do the atoms in the formula indicate the composition of the molecule but the weight of the molecule as well, which latter is found by taking the sum of the atomic weights. In the case of sulphuric acid the molecular weight is equal to 2 for hydrogen plus 32 for the sulphur, plus 4×16, or 64, for the oxygen, the sum of which is 98. For water the molecular weight is $2 + 16$, or 18. Certain groups of atoms are frequently associated; they are not easily decomposed, and they act together in chemical changes in the same manner as an atom. Such a group is called a radical. The SO_4 group in sulphuric acid is an example of a radical. These radicals can exist only in chemical combination; they cannot be isolated.

Classes of Chemical Compounds.—Four classes of chemical compounds take part in chemical changes: acids, bases, and salts, all of which will conduct an electric current when dissolved in water. A fourth group is made up largely of organic or carbon compounds, and these will not conduct electricity. Acids invariably contain hydrogen and a non-metal. In water, acids turn a plant product called litmus red. The hydrogen of the acid produces this color change. A base is a compound made up of a metal and the radical OH. The latter will impart a blue color to litmus when the base is dissolved in water. A salt is the result of the action of an acid upon a base and contains both a metal and a non-metal.

Nomenclature.—In naming bases the metal is first mentioned and then the OH radical, which latter is called the hydroxide group. Thus the compound NaOH is called sodium hydroxide. To those acids containing only one non-metal combined with hydrogen there is prefixed to the root of the word for the non-metal the term hydro and to the end of the word are added the letters 'ic.' The compound represented by the formula HCl is called hydrochloric acid. The salts derived from this acid have the termination 'ide.' Thus NaCl is sodium chloride. In general all salts containing a metal and a non-metal only have the same termination; Na_2O is sodium oxide, Na_2S is sodium sulphide. Most acids contain oxygen; they are known as oxy acids. In many of them the valency of the non-metal varies. The first discovered acid of such a group, and ordinarily the most common, is designated by adding 'ic' to the end of the word of the non-metal in the acid. Accordingly, $HClO_3$ is given the name chloric acid. But for an acid containing one less atom of oxygen, such as $HClO_2$, there would be added the letters 'ous'; it would be called chlorous acid. In the same manner HClO is called hypochlorous acid. To the acid containing four atoms of oxygen is given the name perchloric, and its formula is $HClO_4$. This system of prefixes and suffixes applies to all the elements which form oxy acids, such as sulphur, phosphorous, and nitrogen. By treating each of the above chlorine acids with a base, such as NaOH, sodium hydroxide, salts are formed. From $HClO_4$, perchloric acid, there is obtained sodium perchlorate; from $HClO_3$, chloric acid, sodium chlorate; from the hypothetical acid $HClO_2$, chlorous acid, there is derived the salt, sodium chlorite, which is known in a free state; and from HClO, hypochlorous acid, there is formed sodium hypochlorite. This system of designating salts applies to all similar groups of compounds such as the salts of nitrogen and sulphur.

Types of Chemical Reactions and Chemical Equations.—Chemical changes are ordinarily called chemical reactions. Of these there are five chief types: double decomposition, direct union or synthesis, substitution, decomposition, and molecular or internal rearrangement of the atoms within the molecule itself. The latter type of reaction only occurs frequently in organic reactions. In order to represent reactions concisely chemical equations are employed. The formulas of the elements or compounds acting upon each other are placed upon the left side of an equality mark or an arrow, and upon the right side of the equality mark are written the formulas of the substances produced. Thus the action of hydrochloric acid upon sodium hydroxide is represented in the following manner: $HCl + NaOH = NaCl + H_2O$. This indicates that one molecular weight of hydrochloric acid in contact with one molecular weight of sodium hydroxide will form one molecular weight of the salt sodium chloride and one

molecular weight of water. This is an example of the type of reaction known as double decomposition because both of the compounds used are broken up and converted into entirely different substances. The action of phosphorous upon chlorine, $P + 3Cl = PCl_3$, illustrate a synthetic reaction. Zinc dissolved in hydrochloric acid is shown by the equation $Zn + 2HCl = ZnCl_2 + H_2$ and is an example of substitution. The heating of red oxide of mercury, $HgO = Hg + O$, typifies a decomposition reaction.

Classification of the Elements.—Probably the greatest single contribution for the systematizing of chemistry was made by Mendeleeff in 1869. In that year Mendeleeff published the following table:

Type of Chlorides		RCl	RCl_2	RCl_3	RCl_4	RCl_5—RCl_4	RCl_6	RCl	
Type of Oxides		R_2O	RO	R_2O_3	RO_2	R_2O_5—R_2O_3	RO_3—R_2O_6	R_2O_7	RO_4
Series	Group 0	Group I A B	Group II A B	Group III A B	Group IV A B	Group V A B	Group VI A B	Group VII A B	
1	He=4	Li=7	Gl=9	B=11	C=12	N=14	O=16	F=19 1	
2	Nr=20	Na=23	Mg=24	Al=27	Si=28	P=31	S=32	Cl=35.5	
3	A=40	K=39	Ca=40	Sc=44	Ti=48	V=51	Cr=52	Mn=55	Fe=55.8 Co=58.97 Ni=58.68
4		Cu=63.5	Zn=65	Ga=70	Ge=73	As=75	Se=79	Br=80	
5	Kr=83	Rb=85.5	Sr=87.6	Yt=89	Zr=90.6	Cb=93	Mo=96		Ru=101.7 Rh=103 Pd=106.7
6		Ag=107.9	Cd=112	In=115	Sn=119	Sb=120	Te=127.5	I=125.9	
7	X=130	Cs=132.8	Ba=137	La to Lu 139 to 174	Ce=140	Ta=181	W=184		Os=191 Ir=193 Pt=195
8		Au=197	Hg=200	Tl=204	Pb=207	Bi=208			
9	Nt=222		Ra=226		Th=232	U=238.5			

Mendeleeff observed that when the elements were arranged in the order of the magnitude of their atomic weights, groups of them were formed by taking all which were separated by six elements. The elements in these groups possessed very similar chemical and physical properties. Thus beginning with lithium, Li, in the above table, there follow six other elements, glucinum, boron, carbon, nitrogen, oxygen, and fluorine. We then have sodium, Na, which has almost identical properties with lithium. Similarly in the same group, group I, each member in the order of atomic weights is separated by six other elements. Counting as one the element chosen, Mendeleeff stated that the eighth element repeated the properties of the first; he therefore called this the law of octaves. As shown in the table each main group is subdivided into two parts, A and B. Li, Na, K, Rb, and Cs are somewhat more closely associated in chemical characteristics than Cu, Ag, and Au, Adjoining groups as I and II more nearly resemble each other than those widely separated. Group I is made up entirely of metals while group II is composed of strong non-metals. The blanks in the table indicate the places of elements which will probably be discovered eventually. The table possesses shortcomings such as the irregular groupings of the elements of the eighth column, the reversed positions of nickel and cobalt and of tellurium and iodine; the lack of a place for hydrogen. All these defects of Mendeleeff's table are eliminated in a table published by Moseley in 1914, which he called a table of atomic numbers. The weights for the various elements in this table were obtained by measuring the wave lengths of the rays which each element emitted when used as the anode of an X-ray bulb.

Branches of Chemistry.—The study and application of chemistry may be divided roughly into four fields: inorganic, including the analysis of inorganic compounds; organic, physical and industrial. Inorganic chemistry embraces the reactions of all the elements except carbon. The essential principles of inorganic chemistry have been mentioned in the foregoing sketch. The study of the compounds of

carbon, of which there are many thousands, constitutes organic chemistry. In 1828 Woehler synthesized urea from an inorganic compound. Prior to that time it was believed that organic substances could be formed only in an animal or plant organism. In 1856 Sir William Perkin prepared mauve, the first artificial dye. A few years later Pasteur proved that oxygen was essential in fermentation and decomposition of organic substances. Organic compounds are divided into two groups, aliphatic, or fatty, and aromatic. The former is represented by such substances as alcohol, ether, and chloroform, the latter by benzene and coal tar dyes.

A very important development of organic chemistry, now, in fact, a distinct branch of chemistry, is physiological or, as sometimes called, biological chemistry. Physiological chemistry is in general concerned with what is called metabolism. It treats of the nutritive value of foods and the effect of the digestive fluids upon the latter. The scientific practice of internal medicine is fundamentally a problem of physiological chemistry. Closely associated with physiological chemistry, but also involved in the manufacture of such inorganic materials as rubber, glass, and clay products, is colloidal chemistry. A colloid is a substance which will not pass through a membranous tissue. Practically all animal and vegetable fluids are colloidal or colloids. Physical chemistry is a study of the fundamental causes underlying chemical activity. It is concerned with the rate of chemical reactions, the electrical conductivity of chemical solutions and the amount of heat absorbed or emitted in the course of a chemical reaction. By means of the chemical laws developed through physical chemistry it became possible to obtain nitric acid and ammonia from the free nitrogen of the air. Both of these substances are essential in the manufacture of smokeless powder and of fertilizers. Chemical principles underlie the steel and iron industry, the manufacture of dyes, the preparation of medicines, and the refining of gold and silver from their ores.

Chemical Warfare.—The first use of toxic gases in the World war was on April 22, 1915, when the Germans employed it in an attack against the French and British lines on the Ypres salient. In June, 1918, the United States organized the Chemical Welfare Service. The poison gases used in the war were of various kinds. That first used was chlorine; afterward came the mustard gas, properly dichlorethyl sulphide. Other common gases were phosgene and white phosphorus. Against most of these gases, masks offered a reasonable protection.

Chemnitz (*hem'nits*), the principal manufacturing town in Saxony, Germany, on the Chemnitz, 39 miles southwest of Dresden. It is well built, and has a castle, a lyceum, town-hall, school of design, etc. The principal manufactures are white and printed calicoes, ginghams, handkerchiefs, woolen and half-woolen goods, etc. There are also extensive cotton-spinning mills, and mills for the spinning of combed wool and floss-silk; dye-works, print-works, bleach-works, chemical works; large manufactures of cotton hose, etc. The manufacture of machinery also has now become important. The cotton hose and woolen goods are exported to Japan, China, Africa, and America, while the machinery is chiefly destined for Russia, Silesia, and Bohemia. It has had a rapid recent progress, having now three times the population it had in 1870. Pop. 286,454.

Chemnitz (*hem'nits*), MARTIN, a German Protestant theologian of the 16th century, born in the mark of Brandenburg in 1522. He was educated at Wittemberg and became a schoolmaster in Wriezen on the Oder. In 1550 he became librarian of Duke Albert of Prussia, and about this time wrote his *Loci Theologici*, 1591, a learned commentary on Melanchthon's system of dogmatics. He subsequently went as a minister to Brunswick, where he died in 1586. Of his other works the most valuable is the *Examen Consilii Tridentini*.

Chemosh (*kē'mosh*), the national god of the Moabites, who were on that account called 'the people of Chemosh' (Num., xxi, 29; Jer., xlviii, 46). At an early period this deity appears also as the national god of the Ammonites (Judg., xi, 24), though his worship seems afterwards to have given place to that of Moloch (I Ki., xi, 5, 7), if Moloch be not merely another name for the same deity. The worship of Chemosh was even introduced among the Hebrews by Solomon, who "built an high place for Chemosh, the abomination of Moab, in the hill that is before Jerusalem" (I Ki., xi, 7).

Chemosis (*kē-mō'sis*), an affection of the eye, in which the conjunctiva is elevated above the transparent cornea.

Chemother'apy. See *Serum Therapy*.

Chemulpo (*chē-mul'pō*), one of the three treaty-ports of Corea, exporting beans, ginseng, hides, wheat, etc., and importing European and American manufactures. Pop. 30,000.

Chenab (chen-ȧb), a river of Hindustan, one of the five rivers of the Punjab. It rises in the Himalayan ranges of Kashmir, and entering the Punjab near Sialkot, flows in a southwesterly direction till it unites with the Jehlam; length about 800 miles. At Wazirabad it is crossed by a great iron railway bridge more than a mile long.

Cheng, a Chinese musical instrument, consisting of a series of tubes having free reeds. Its introduction into Europe led to the invention of the accordion, harmonium, and other free-reed instruments.

Chénier (shā-nyā), ANDRÉ-MARIE DE, a French poet, born at Constantinople in 1762, went to France when very young, and entered the army, but left shortly after his twentieth year to devote himself to literary pursuits. In 1790 he joined the moderate section of the Republicans, and made himself offensive alike to the Royalists and Jacobinical party. Being brought before the revolutionary tribunal he was condemned and guillotined July 25, 1794. The poems of Chénier are inconsiderable in number, but give the author a high place among the poets of France. His chief works are *Hermes; The Elegies; La Liberté*, etc.; and some beautiful odes, of which *La Jeune Captive*, written in prison, is perhaps the best known.

Chénier, MARIE JOSEPH BLAISE DE, brother of the foregoing, born Aug. 28, 1764, at Constantinople, went when very young to Paris, served as an officer of dragoons, left the service, and devoted himself to literary pursuits. His dramas *Charles IX*, *Henry VIII*, and *La Morte de Calas*, full of wild democratic declamation, were received with great applause. He was chosen a member of the Convention, where, for a considerable time, he belonged to the party of the most violent Democrats. His works comprise discourses on the history of French literature, as well as odes, songs, hymns, etc. He died in January, 1811.

Chenille (she-nil'), a sort of ornamental fabric of cord-like form, made by weaving or twisting together warp-threads, with a transverse filling or weft, the loose ends of which project all round in the form of a pile. Chenille carpets have a weft of chenille, the loose threads of which produce a fine, velvety pile.

Chénonceaux (shā-noṇ-sō). See *Bléré*.

Chenopodiaceæ (kē-nō-pod-i-ā'se-ē), a nat. order of apetalous exogens, consisting of more or less succulent herbs or shrubs, belonging to about eighty genera and 600 species. They are mostly innocent weeds, but several are employed as pot-herbs, such as spinach and beet, and others for the manufacture of soda. The genus *Chenopod'ium* consists of weedy plants, common in waste places, and known in Britain by the names of goosefoot, fat-hen, good King Henry, etc. *C. anthelminticum* is a species well known in the United States, where it is in repute as a vermifuge, under the name of worm-seed, the seeds or the oil obtained from them being given as a remedy for worms. *C. Quinoa* is an important S. American species, having edible seeds, on account of which it is largely cultivated in Peru and Chile as a food-plant.

Cheops (kē'ops), the name given by Herodotus to the Egyptian monarch whom the Egyptians themselves called Khufu. He belonged to the rulers who had for their capital Memphis; lived about 2800-2700 B.C., and built the largest of the pyramids. According to Herodotus, he employed 100,000 men on this work constantly for 20 years.

Chephren (kef'ren), or CEPHRENES, was the successor of Cheops as king of Egypt, and the builder of the second pyramid. His name is properly Khafra. See *Cheops*.

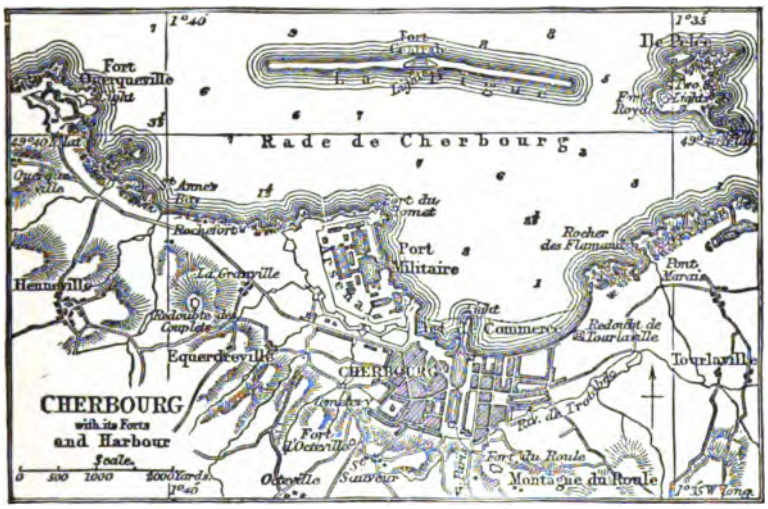
Chepstow (chep'stō), a town and port in England, County Monmouth, on the Wye, 14 miles N. by W. of Bristol. The high tides of the Wye allow large ships to reach the town, which is very ancient, and has a castle, portions of which date back to the Conquest. In the vicinity are the beautiful ruins of Tintern Abbey. Pop. 2953.

Cheque, or CHECK (chek), a draft or bill on a bank, payable on presentation. A cheque may be drawn payable to the bearer, or to the order of some one named; the first form is transferable without endorsation, and payable to any one who presents it; the second must be endorsed, that is, the person in whose favor it is drawn must write his name on the back of it. Cheques are a very important species of mercantile currency wherever there is a well-organized system of banking. The regular use of them for all payments, except of small amount, makes the transfer of funds a mere matter of cross-entries and transferring of balances among bankers, and tends greatly to economize the use of the precious metals as a currency.

Chequy, or CHEQUERED. See *Heraldry.*

Cher (shār), a river of Central France, a tributary of the Loire, which it enters near Tours; length, 200 miles.

Cher (shār), a department of Central France, named from the river Cher, and formed from part of the old provinces of Berry and Bourbonnais; area, 2819 square miles; capital, Bourges. The surface is in general flat, but is diversified in the N. by chains of inconsiderable hills. Soil various, but fertile in the neighborhood of the Loire and Allier. The forests and pastures are extensive. More grain and wine are produced than the demands of the inhabitants require. The preparation and manufacture of iron, called Berry iron, is the principal branch of industry. The department is divided into three arrondissements. Pop. 337,810.



Cherbourg (shār-bör), a fortified seaport and naval arsenal of France, in the department of La Manche, 196 miles W. N. W. Paris. The fortifications are very extensive, and have been greatly strengthened in recent years, so that Cherbourg, if not impregnable from the sea, is at least very difficult of attack. The port is divided into the commercial and naval ports, which are quite distinct. The Port Militaire is accessible at all times of tide for vessels of the largest class; there are slips for vessels of the largest dimensions, dry docks, building-sheds, mast-houses, boiler-works, and in short everything necessary for the building and fitting out of ships of war. There is a great *digue* or breakwater, stretching across the roadstead, which, though protected on three sides by the land, was formerly open to the heavy seas from the north. The *digue* was commenced under Louis XVI, is 4120 yards long, and is 2¼ miles from the harbor, in water varying from 42 to 62 feet deep. A fort and lighthouse occupy the center of the *digue*, and there are circular forts at the extremities. The principal industry of the town is centered in the works of the dockyard, the commercial trade and manufactures apart from shipbuilding being comparatively insignificant. It occupies the site of a Roman station. William the Conqueror founded a hospital here, and built the castle church. The castle was one of the strongholds of Normandy. A few miles from the harbor the Federal warship *Kearsarge* sank the Confederate ship *Alabama* (q. v.) June 19, 1864. Pop. 43,731.

Cherbury, LORD. See *Herbert, Edward.*

Cheribon (sher'i-bon), a seaport on the island of Java, capital of the province of the same name. The province lies on the coast towards the N. W., produces coffee, timber, areca-nuts, indigo and sugar, and has about 1,577,521 inhabitants. The town lies in a deep bay on the north coast, and is the residence of a Dutch governor. Pop. 18,495.

Cherimoyer (c h e r-i-m o i'e r), the fruit of the *Anóna Cherimolia*, a native of S. and Central America, allied to the custard-apple. It is a heart-shaped fruit with a scaly exterior, and numerous seeds buried in a delicious pulp.

Chernigov. See *Tchernigov.*

Cherokee (cher'o-kē), a city, county seat of Cherokee Co., Iowa, 50 miles N. E. of Sioux City. It has manufacturing and farm interests. Here is a State hospital for insane. Pop. 5824.

Cherokees (cher-ō-kēz'), a tribe of North American Indians in the United States, occupying an allotted region in Oklahoma. Their old seats were in Georgia, Alabama, Mississippi and Tennessee. The Cherokees are the most enlightened of the Indian tribes, have invented an alphabet, printed books and newspapers in their own language, live in well-built villages, and have an excellent school system. Their numbers are about 20,000.

Cheroot (she-rōt'). See *Cigar.*

Cherry (cher'i), a fruit-tree of the prune or plum tribe, very ornamental and therefore much cultivated in shrubberies. It is a native of most temperate countries of the northern hemisphere. The cultivated varieties probably belong to two species, *Cerăsus avium* and *Cerăsus vulgāris*, the genus *Cerasus* being considered a subgenus of *Prunus*. They are numerous, as the red or garden cherry, the red heart, the white heart, the black heart, etc. The fruit of the wild cherry, or *gean*, is often as well flavored, if not quite so large, as that of the cultivated varieties. It is said that the cherry was originally brought from Cerasus, in Pontus, to Italy, by Lucullus, about B.C. 70, and introduced into England by the Romans about A.D. 46. The cherry is used in making the liqueurs Kirschwasser and Maraschino (which see). The wood of the cherry-tree is hard and tough, and is very serviceable to turners and cabinet-makers. An ornamental but not edible species is the bird-cherry (which see). The American wild cherry (*Cerăsus Virginiāna*), is a fine large tree, the timber of which is much used by cabinet-makers and others, though the fruit, growing in clusters, is bitter and rather astringent. It is famous for its medicinal bark.

Cherry-laurel, the common name of *Cerăsus Laurocerăsus*, nat. order Rosaceæ, an evergreen shrub, a native of Asia Minor, but now naturalized in the United States and common in shrubberies. It is commonly called laurel, but must not be confounded with the sweet-bay or other true species of laurel. The leaves yield an oil nearly identical with that got from bitter almonds. The distilled water (called 'laurel water') from the leaves is used in medicine in the same way as diluted hydrocyanic or prussic acid. It is poisonous in large doses. The Portugal laurel is another species.

Cherry Valley, a village in Otsego Co., N. Y., the scene of a massacre November 11, 1778, during the Revolutionary war, when a band of Indians, led by Joseph Brant (q. v.) and Tories, under Walter Butler, son of Colonel John Butler (q. v.), fell upon the inhabitants, killing 32.

Chersonesus (k e r-so-nē'sus; Greek, 'a peninsula'), anciently a name applied to several peninsulas, as the Cimbrian Chersonesus (*Chersonesus Cimbrica*), now Jutland, etc., the Tauric Chersonesus (*Ch. Taurica*), the peninsula formed by the Black Sea and the Sea of Azoff—the Crimea.

Chert (chêrt), a variety of quartz, called also *Hornstone* or *Rockflint*. It is less hard than common quartz, and is usually amorphous, sometimes globular or in nodules. Siliceous concretions occurring as nodules and layers in limestone rocks are also called chert.

Chertsey (chêrt'si), a town of England, in Surrey, 20 miles S. W. of London, on the Thames, giving name to a parl. div. of the county. The Saxon kings had a palace here. Bricks and tiles are made, and vegetables largely cultivated. Pop. 13,819.

Cherub (cher'ub; in the plural *Cherubs* and *Cherubim*), one of an order of angels variously represented at different times, but generally as winged spirits with a human countenance, and distinguished by their knowledge from the seraphs, whose distinctive quality is love. The first mention of cherubs is in Gen. iii, 24. The cherubs in Ezekiel's vision had each four heads or faces, the hands of a man, and wings. The four faces were the face of a bull, that of a man, that of a lion, and that of an eagle. (Ezek., iv and x.) In the celestial hierarchy cherubs are represented as spirits next in order to seraphs.

Cherubini (kā-rō-bē'nē), MARIA LUIGI CARLO ZENOBIO SALVATORE, an eminent Italian composer born at Florence in 1760. His first opera, *Quinto Fabio*, was produced in

Alessandria in 1780, and in Rome (in an altered form) in 1783, with such success as to spread his fame over Italy. After visiting London he finally settled in Paris, where he became director of the École Royale in 1822, and died in 1842. Among his compositions are *Iphigenia in Aulide*, *Lodoiska*, *Faniska*, *Les Deux Journées*, etc. In his later years he confined himself almost exclusively to the composition of sacred music, and gained a lasting fame by his *Coronation Mass*, and more especially his gorgeous *Requiem*.

Cherusci (ke-rus'sī), an ancient German tribe, whose territory probably was situated in that part of Germany lying between the Weser and the Elbe, and having the Harz Mountains on the N. and the Sudetic range on the S. This tribe was known to the Romans before 50 B.C., and occasionally served in the Roman armies. But when Varus attempted to subject them to the Roman laws they formed a confederation with many smaller tribes, and having decoyed him into the forests, destroyed his whole army in a battle which lasted three days, and in which he himself was slain (A.D. 9). Upon this the Cherusci became the chief object of the attacks of the Romans. Germanicus marched against them, but though successful in several campaigns did not obtain any permanent advantages. Subsequently the Cherusci were overcome by the Chatti, and latterly they were incorporated among the Franks.

Chervil (cher'vil), the popular name of umbelliferous plants of the genus *Chærophyllum*, but especially of *C. temŭlum*, the only British species, a hairy weed with longish, grooved fruits. Garden chervil is *Anthriscus cerefolium*, an umbelliferous plant much used in soups and salads in some European countries. The parsnip chervil (*A. bulbōsus*) has a root like a small carrot, with a flavor between that of a chestnut and a potato. Sweet chervil, sweet cicely, or myrrh is *Myrrhis odorāta*, an aromatic and stimulant umbellifer formerly used as a pot-herb, growing in a semiwild state in Britain.

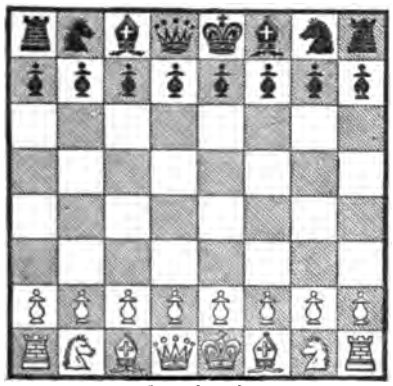
Chesapeake Bay (ches'a-pēk), a spacious bay of the United States, in the states of Virginia and Maryland. Its entrance is between Cape Charles and Cape Henry, 16 miles wide, and it extends 180 miles to the northward. It is from 10 to 30 miles broad, and at most places as much as 9 fathoms deep, affording many commodious harbors and a safe and easy navigation. It receives the Susquehanna, Potomac, York and James Rivers and supplies a route to the sea for the commerce of Baltimore, Washington, Norfolk and Richmond. Off Norfolk lies the fine harbor of Hampton Roads, the scene of the famous battle between the *Monitor* and *Merrimac*. The oyster fisheries of Chesapeake Bay are the finest in the country, and its large numbers of wild fowl, especially the famous canvas-back duck, make it a favorite resort for sportsmen.

Cheselden (ches'el-den), WILLIAM, an English surgeon and anatomist, born in Leicestershire in 1688, went to London to prosecute his studies, and at the age of twenty-two began to give lectures on anatomy. In 1713 he published a treatise on the *Anatomy of the Human Body*, long esteemed as a manual of the science. In 1723 he published a *Treatise on the High Operation for the Stone*, and afterwards added to his reputation by operating for stone. In 1733 was published his *Osteography, or Anatomy of the Bones*, folio, consisting of plates and short explanations, a splendid and accurate work. He died at Bath in 1752.

Cheshire (chesh'ir), or CHESTER, a maritime county and county palatine of England, bounded by the counties of Lancaster, York, Derby, Stafford, Salop, Denbigh, Flint, the estuaries of the Dee and Mersey, and the Irish Sea. The area is 1027.8 sq. miles, of which only a sixteenth is uncultivated. The surface is generally level, the soil mostly a rich reddish loam variously clayey or sandy. There is some of the finest pasture land in England; and cheese, the main produce of the Cheshire farmer, is made in great quantities. Extensive tracts of land are cultivated as market-gardens, the produce being sent to Liverpool, Manchester, and other towns. Minerals abound, especially rock-salt and coal, which are extensively worked. Cotton manufacture is carried on at Stockport, Stalybridge, and the northeastern district; shipbuilding at Birkenhead and other places. Trade is facilitated by numerous railway lines and a splendid system of canals. The chief rivers are the Mersey, and Dee and the Weaver. Small sheets of water called *meres* are numerous. Cheshire has eight parliamentary divisions, each returning one member. Principal towns, Chester, the county town, Macclesfield, Stockport, Birkenhead and Stalybridge. Pop. (1911) 676,356.

Chess, a well-known game of great antiquity and of eastern ori-

gin, having probably arisen in India, and thence spread through Persia and Arabia to Europe. The game is played by two persons, on a board consisting of sixty-four squares arranged in eight rows of



Chess-board.

eight squares each, alternately black and white. Each player has sixteen men, eight of which, known as *pawns*, are of the lowest grade; the other eight, called *pieces*, are of various grades. They are, on each side, *king* and *queen;* two *bishops*, two *knights*, and two *rooks* or *castles*. The board must be placed so that each player shall have a white square to his right hand. The men are then set upon the two rows of squares next the players; the pieces on the first, the pawns on the second row, leaving four unoccupied rows in the center. The king and queen occupy the central squares facing the corresponding pieces on the opposite side. The queen always occupies her own color, white queen on white square, black on black. The two bishops occupy the squares next the king and queen; the two knights the squares next the bishops; the rooks the last or corner squares. The pawns fill indiscriminately the squares of the second or front row. The men standing on the king's or queen's side of the board are named respectively king's and queen's men. Thus king's bishop or knight is the bishop or knight on the side of the king. The pawns are named from the pieces in front of which they stand; king's pawn, king's knight's pawn, queen's rook's pawn, etc. The names of the men are contracted as follows:—King, K; King's Bishop, K.B.; King's Knight, K.Kt.; King's Rook, K.R.; Queen, Q.; Queen's Bishop, Q.B.; Queen's Knight, Q.Kt.; Queen's Rook, Q.R. The pawns are contracted: K.P., Q.P., K.B.P., Q.Kt.P., etc. The board is divided into eight files running longitudinally from one player to the other, and laterally into eight ranks or rows. Each file is named from the piece which occupies its first square, and counting inversely from the position of each player to that of the other, the rows are numbered from 1 to 8. At White's right-hand corner we have thus K.R. square; immediately above this K.R.2; and so on to K.R. 8, which completes the file; the second file begins with K.Kt. square on the first row, and ends with K.Kt. 8 on the eighth. White's K.R. 8 and K.Kt. 8 are thus Black's K.R. square, and K. Kt. square, and the moves of each player are described throughout from his own position, in inverse order to the moves of his opponent.

In chess all the men capture by occupying the position of the captured man, which is removed from the board; the only exception to this rule is the *en passant* capture by the pawn, which will be explained later. The ordinary move of the *Pawn* is straight forward in the same file; a pawn never moves backward. The first time a P. is moved it may be played forward one square or two; afterwards only one square at a time. But in capturing an adverse piece the P. moves diagonally one square to occupy the position of the captured man. Thus if White open a game by playing P. to K. 4 and Black answers P. to K. 4, the pawns are immovable; but if White now plays P. to K.B. 4 or P. to Q. 4, Black may capture the P. last advanced. Pawns have another mode of capture peculiar to themselves, known as the *en passant* capture, which is only available against pawns. If Black's P., instead of occupying K. 4, stood on K. 5, and White played P. to Q. 4, Black could not capture it by placing his P. on the square it occupies, which would be a false move; but he is at liberty to make the capture by placing his own P. on the square passed over by White's (Q. 6). The privilege of capturing *en passant* has two important limitations: (1) the P. to be captured must have moved *two* squares on its initial move, and (2) the capture must be made *immediately after* it has moved; if other moves intervene the privilege is lost. When a P., by moving or capturing, reaches the eighth square of any file it can no longer remain a P., but must at once be exchanged for a piece of the same color. The player may choose any piece except the king; but

the queen, the most valuable piece, is generally the piece chosen. This is called *queening* a pawn, and a player may thus have several queens on the board. *The Rook.*—The moves of the pieces are not, like those of the pawns, limited to a single direction. The R. moves in any direction and for any distance that is open along either the particular row or the file on which it happens to stand. It can, of course, capture any obstructing opposing piece or pawn and occupy its place. *The Bishop.*—The B.'s move diagonally, either backward or forward, and can never change the color of their square. Like the R.'s, their range is only limited by the extent to which their path is open or unobstructed; a B. may also capture an obstructing opponent. *The Queen.*—The Q. combines the moves of the R. and B. She is the most powerful piece on the board, and can move to, or capture at, any distance or direction in a straight line. *The King.*—The K. is at once the weakest and the most valuable piece on the board. In point of direction he is as free as the queen, but for distance he is limited to the adjacent squares. Standing on any central square he commands the eight squares around him and no more. Besides his ordinary move the K. has another by special privilege, in which the R. participates. Once in the game, if the squares between K. and R. are clear, if neither K. nor R. has moved, if K. is not attacked by any hostile man, and if no hostile man commands the square over which K. has to pass, K. may move two squares towards either K.R. or Q.R., and R. in the same move must occupy the square over which K. has passed. This is called *castling.* *The Knight.*—The Kt., unlike the other pieces, never moves in a straight line. His move is limited to two squares at a time, one forwards, backwards or sideways, and one diagonally, and he can leap over any man occupying a square intermediate to that to which he intends to go. All captures in chess are optional.

The definite aim in chess is the reduction to surrender of the opposing king. The K. in chess is supposed to be inviolable, that is, he cannot be taken, he can only be in such a position that if it were any other piece it would be taken. Notice of every direct attack upon him must be given by the adversary saying *check*, and when the K. is attacked all other plans must be abandoned, and all other men sacrificed, if necessary, either to remove him from danger, interpose another man, or capture the assailant. It is also a fundamental rule of the game that the K. cannot be moved into check. When the K. can no longer be defended on being checked by the adversary, either by moving him out of danger, or by interposing another man, or by capture of the attacking man the game is lost, and the adversary announces this by saying *checkmate.* When, by inadvertence or lack of skill, a player blocks up his opponent's K. so that it cannot move without going into check, and no other man can be moved without exposing him, the player reduced to this extremity cannot, without violating the fundamental rule referred to, play at all. In such a case, the one player being unable to play and the other out of turn, the game is considered *drawn*, that is, concluded without advantage to either player.

Chest, in man and the higher vertebrates, the cavity formed by the breast-bone in front and the ribs and backbone at the sides and behind, shut off from the abdomen below by the diaphragm or midriff. It contains the heart, lungs, etc., and the gullet passes through it. See *Thorax.*

Chester (ches'ter), an English parliamentary and municipal borough, county town of Cheshire, situated on the Dee about 16 miles from Liverpool. It is a bishop's see, and contains an old and interesting cathedral recently restored. The four principal streets have the roadways sunk considerably below the level of the footways, which run within piazzas covered by the upper portion of the houses, and in front of the ranges of shops. Flights of steps at convenient distances connect the carriageways with the footways or 'rows.' There are also shops and warehouses below the rows. These features, together with the ancient walls (now a public promenade) and the quaintly-carved wooden gables of many of the houses, give an antique and picturesque appearance to Chester. Chester has manufactories of lead pipes, boots and shoes, iron-foundries, chemical works, etc. The port has been improved of late years, and there is a considerable amount of shipping on the Dee. Pop. (1911) 39,038.

Chester, a city of Pennsylvania, on the Delaware, 15 miles below Philadelphia, with which it is connected by steam and electric railways. It was settled by the Swedes in 1653 and is the oldest town in the State, its Swedish name being Upland. Within recent years it has grown rapidly and become the seat of large manufacturing

interests, including great ship yards, steel works, textile mills, and other industries. Pop. (1910) 38,537; (1920) 58,030.

Chester, a city, county seat of Chester Co., South Carolina, 65 miles N. by W. of Columbia. The principal industry is cotton mills. It is served by several railroads and has hydro-electric power. Pop. 5557.

Chesterfield, a town of Derbyshire, England, 24 miles N. of Derby. It has manufactures of machinery, silk, cotton, etc. Pop. 40,917.

Chesterfield, PHILIP DORMER STANHOPE, EARL OF, an English statesman and author, was born in London in 1694, and died in 1773. On the accession of George I (1714) he became Gentleman of the Bedchamber to the Prince of Wales, and was returned by the borough of St. Germains, in Cornwall, to parliament. He succeeded his father in the title in 1726, sat in the House of Lords, and acquired some distinction as a speaker. In 1728 he was ambassador to Holland, in 1744 lord-lieutenant of Ireland, a position which he occupied with great credit, and in 1746 secretary of state; but in 1748 retired from public affairs. He obtained some reputation as an author by essays and a series of letters to his son. These writings combine wit and good sense with great knowledge of society.

Chester-le-Street, a town of England, in the county of and 5 miles N. of Durham, giving name to a parliamentary division of the county. It has coal-mines and iron-works. Pop. (1911) 14,713.

Chesterton, GILBERT KEITH, an English journalist and author, born at Campden Hill, Kensington, in 1874; was educated at St. Paul's School; attended classes at the Slade School, and began his career by reviewing art books. He has contributed to many different periodicals and has written a number of books, including *Browning* (English Men of Letters); *Heretics* (1905); *Dickens* (1906); *Orthodoxy* (1908); *Tremendous Trifles* (1909); *What's Wrong with the World* (1910); *A Miscellany of Men* (1912).

Chest-foundering, a disease in horses, a rheumatic affection of the muscles of the chest and forelegs, impeding both respiration and the motion of the limbs.

Chestnut (ches'nut), a genus of plants, order Cupuliferæ, allied to the beech. The common or Spanish chestnut (*Castánea vesca*) is a stately tree, with large, handsome, serrated, dark-green leaves. The fruit consists of two or more seeds enveloped in a prickly husk. Probably a native of Asia Minor, it has long been naturalized in Europe, and was perhaps introduced into Britain by the Romans. Chestnuts form a staple article of food

Chestnut (*Castanea vesca*).

among the peasants of Spain and Italy. The timber of the tree is inferior to that of the oak, though similar in appearance. Two American species of chestnuts, *C. Americāna* and *C. Pumila* or *chinkapin* (the latter a shrub), have edible fruits smaller than the fruit of the European tree.—The name of Cape Chestnut is given to a beautiful tree of the rue family, a native of Cape Colony.—The Moreton Bay Chestnut is a leguminous tree of Australia, *Castanospermum Australe*, with fruits resembling those of the chestnut.—The water-chestnut is the water-caltrop, *Trapa natans*. *See Caltrop*.—The horse-chestnut (which see) is quite a different tree from the common chestnut.

Chetah (chē'ta), the *Felis jubāta* or *Cynailūrus jubātus*), or hunting leopard of India, a native of Asia and Africa. It has its specific name (*jubāta*, crested or maned) from a short mane-like crest at the back of the head. When used for hunting it is hooded and placed in a car. When a herd of deer is seen, its keeper places its head in the proper direction and removes its hood. It is about the size of a large greyhound, has a catlike head, but a body more like a dog's. A slightly different form inhabits Africa, distinguished as a different species, though with only trivial variations.

Chettik (chet'tik), a tree of Java, the *Strychnos Tieuté*, yielding a very virulent poison called by the same name, owing its virulence to the strychnine it contains.

Chetvert (chet'vert), a Russian grain-measure, equal to 0.7218 of an imperial quarter, or 5.77 bushels.

Cheval, A (à shė-vàl; French), on horseback, astride any object. The troops are said to be arranged *à cheval* when they are placed so as to command two roads, two banks of a river, etc.

Cheval-glass (shė-val'), a swing looking-glass mounted on a frame, and large enough to reflect the whole figure.

Chevalier (shė-vā-lyā), MICHEL, a celebrated economist, born at Limoges in France, in 1806. He was educated as an engineer in the School of Mines, joined the St. Simonians, and suffered six months' imprisonment for promulgating the free doctrines of Père Enfantin's party. On his liberation M. Chevalier renounced his extreme doctrines, and was sent to the United States and to England on special missions. He became a councilor of state (1838), professor of political economy in the Collège de France (1840), member of the chamber of deputies (1846), and member of the Institute (1851). By this time he had written a number of works: *Lettres sur l'Amerique du Nord; Des Intérêts Matériels en France; Essais de Politique Industrielle; Cours d'Economie Politique,* etc. He was known as a strong advocate of free trade and as a specialist on questions of currency. Along with Cobden and Bright he had a great part in the commercial treaty of 1860 between France and Britain. He died in 1879.

Chevaux-de-frise (shė-vō' dē frēz; 'friesland horses,' so called because first used at the siege of Groningen, in that province, in 1658), contrivances used in warfare, consisting of long pieces of timber or iron forming a center, with long, sharp-pointed spikes projecting all round, placed on the ground and serving to defend a passage, stop a breach, etc.

Cheviot Hills (chē'vi-ot, or chev'i-ot), a range on the borders of England and Scotland, stretching S. W. to N. E. for above 35 miles; culminating point, the Cheviot, 2688 ft. They are clothed for the most part with a close green sward, and are pastured by a celebrated breed of sheep.

Cheviot Sheep, a variety of sheep, taking their name from the well-known Cheviot mountain range, noted for their large carcass and valuable wool, which qualities, combined with a hardiness second only to that of the black-faced breed, constitute them the most valuable race of mountain sheep in Britain. The fleece weighs from 3 to 4 lbs., and the carcass of ewes varies from 12 to 16 lbs. per quarter, that of wethers from 16 to 20 lbs.

Chevreul (shė-vreul), MICHEL EUGÈNE, a French chemist, born in 1786. In 1813 he became professor of physical science in the Charlemagne Lyceum, in 1824 director of dyeing in the Gobelins manufactory, in 1830 professor of chemistry in the Collège de France. In 1879 he retired. He wrote various works on chemistry and dyeing, and an important work on the *Principles of Harmony and Contrast of Colors,* translated into English. He died in 1889.

Chevron (shev'ron), a heraldic and ornamental form, variously used. In heraldry, the chevron is an ordinary supposed to represent two rafters meeting at top. It is one of charges called honorable ordinaries, and is usually placed as shown in the accompanying cut. Chevrons of various forms are used in several armies as the distinguishing badge worn on the sleeve of a non-commissioned officer. In architecture, the *chevron moulding* consists of a variety of fret ornament of a zigzag form, common in Norman architecture.

Chevron.

Chevron Molding.

Chevrotain (shev'ru-tān; *Tragŭlus pygmæus*), a species of small musk-deer found in India and Southeastern Asia and the islands.

Che'vy Chase, the name of a celebrated British border ballad, which is probably founded on some actual encounter which took place between its heroes, Percy and Douglas, although the incidents mentioned in it are not historical. On account of the similarity of the incidents in this ballad to those of *The Battle of Otterbourne,* the two ballads have often been confounded; but the probability is that if any historical event is celebrated at all in the ballad of *Chevy Chase,* it is different from that celebrated in *The Battle of Otterbourne,* and that the similarity between the two ballads is to be ex-

plained by supposing that many of the words of the former were borrowed from the latter. There are two versions of the ballad bearing the name of *Chevy Chase*, an older one, originally called *The Hunting of the Cheviot*, and a more modern one. From the fact that the older version is mentioned in the *Complaynt of Scotland*, written in 1548, it is clear that it was known in Scotland before that time. The age of the more modern version is believed to be no later than the reign of Charles II. This is the version which forms the subject of the critique by Addison in Nos. 70 and 74 of the *Spectator*.

Cheyenne (shī-ăn'), capital of the State of Wyoming and county seat of Laramie Co., 105 miles N. of Denver, on the main lines of the Union Pacific and Colorado & Southern railroads, and the Lincoln and Yellowstone highways. It is the center of an immense agricultural and stock-raising area. The Cheyenne Frontier Days Celebration, held annually, attracts great crowds. Fort D. A. Russell is a few miles from the city. It is the main airport of the Rocky Mountain region (elevation, 6088 feet above sea level). Pop. (1910) 11,320; (1920) 13,829.—The river CHEYENNE is a tributary of the Missouri, formed by two branches, rising in Wyoming; length, 100 miles.

Cheyenne Indians, a warlike branch of the Algonquin stock of American Indians, originally on the Red River of the North, later on the Cheyenne River in Wyoming and as far south as the Arkansas. During the Civil war and until 1867 the government had frequent wars and other troubles with them. They now form part of the Indian population of Oklahoma.

Chiabrera (kĭ-ä-brā'rä), GABRIELLO, an Italian poet, born in 1552; died in 1637; wrote various kinds of poems, and imitated Pindar and Anacreon in odes and canzonets, not unsuccessfully.

Chiana (kē-ä'nä; anciently *Clanis*), a river and valley of Italy, in Tuscany and Umbria. The river is artificially divided into two branches, the one flowing into the Arno, the other into the Paglia. By works begun in 1551 and completed only in 1823 the valley of the Chiana has been drained and brought under cultivation, being now one of the most productive portions of Italy.

Chianti (kē-ăn'tē), a district in Italy, near Siena, where what is now the best-known red wine of Italy is produced. Chianti wine is full flavored and astringent, with an alcoholic strength of about 20 per cent.

Chian Turpentine (kī-an), a turpentine or resin obtained from the island of Chios (Scio), yielded by *Pistachia Terebinthus*, a native of the Mediterranean islands and shores, used in medicine. Called also Cyprus turpentine.

Chiapas (chē-ä'päs), a state of the Mexican Confederation, area 27,222 square miles. It is in many parts mountainous, is intersected by several considerable streams, and covered with immense forests. They are rich in minerals, including gold. The valleys are fertile, and produce much maize, sugar, cacao and cotton, etc. But trade is quite undeveloped on account of the lack of roads. The capital is Tuxtla Gutierrez. In this state are the famous mines of Palinque. Pop. (1910) 436,817.

Chiaramonte (kē-ä-rä-mon'tā), a town of Sicily, province Syracuse, on a hill in a highly fertile neighborhood. Pop. 10,460.

Chiari (kē-ä'rē), a town of N. Italy, province of and 14 miles w. Brescia, with manufactures of silk. Pop. 11,000.

Chiaroscuro (kī-ä-ros-kō'rō; an Italian term, meaning 'clear-obscure'; in French, *clair-obscur*), in painting, the distribution of the lights and shadows in a picture. A composition, however perfect in other respects, becomes a picture only by means of the chiaroscuro which gives faithfulness to the representation, and therefore is of the highest importance for the painter. The drawing of a piece may be perfectly correct, the coloring may be brilliant and true, and yet the whole picture remain cold and hard. By the chiaroscuro objects are made to advance or recede from the eye, produce a mutual effect, and form a united and beautiful whole.

Chiastolite (kī-as'tō-līt), a mineral, a silicate of aluminium, having crystals arranged in a peculiar manner. The form of the crystals is a four-sided prism, whose bases are rhombs differing little from squares, but each crystal, when viewed at its extremities or on a transverse section, is obviously composed of two very different substances, and its general aspect is that of a black prism passing longitudinally through the axis of another prism which is whitish.

Chiavari (kī-ä'vä-rē), a seaport town, Italy, in the province of Genoa, 23 miles E. by S. of Genoa, in

© *Ewing Galloway, N. Y.*

MICHIGAN BOULEVARD AND THE CHICAGO SKYLINE

A panoramic view showing Michigan Boulevard, Grant Park, the Illinois Central suburban passenger terminal, and the Chicago skyline.

a district productive of wines, olives and silk. Pop. 10,397.

Chiavenna (kē-ä-ven'nä), a town of Italy, province of Sondrio, Lombardy, 38 miles N. N. W. of Bergamo. It lies in a valley in the midst of magnificent scenery on the road to the Splügen Pass, and has an important transit trade. Pop. 3211.

Chibchas (chib'chaus), a nation of semicivilized Indians, who formerly occupied the region about the headwaters of the Magdalena River, S. America, while branches extended widely through the area of the present state of Colombia. They are of interest for their abundant and striking archæological relics. These include neatly built small stone temples, large carved images, rock paintings and carvings with figures of men and animals and various others. Their burial places contain gold and silver ornaments in considerable quantity, $50,000 worth of gold being found in a single mound. Their gold vases surpass in beauty of form any found elsewhere in America.

Chibouque (shi'bōk), a Turkish pipe with a long stem.

Chica (chē'kä), a red coloring matter which the Indians on the upper parts of the Orinoco and the Rio Negro prepare from the leaves of a plant native to that region called *Bignonia Chica*, and with which they paint their skin, in order to be better able to resist the rays of the sun. See *Bignonia*.

Chica (chē'kä), a kind of beer made from maize, in general use in Chile, Peru, and elsewhere in the mountainous regions of South America. The usual method of preparing it is to steep the maize till it begins to grow, when it is exposed to dry in the sun. The malt thus prepared is then ground, mixed with warm water, and left to ferment. The beer, when ready, has a dark-yellow color, and a pleasant and somewhat bitter and sour taste, and is very intoxicating. Sometimes the Indians, instead of grinding the malt, chew it, and this variety of the liquor is considered the best. It is the national drink of the Indians, and consumed by them in great quantities. *Pito* and *poso* are other names for it.

Chicacole, or CHIKAKOL (chik'a-kōl'), a town of India, in the Ganjam district, Madras Presidency, 567 miles N. E. of Madras, notable for its fine muslin manufactures. Pop. 18,196.

Chicago (shi-kä'gō), a city of Illinois, the second largest in the United States, situated on the S. W. shore of Lake Michigan, and on the Chicago and the Calumet Rivers. It stands on a level plain, and is surrounded by a fertile country. The Chicago River and its two branches separate the city into three unequal divisions, known as the North, the South and the West, connected by numerous bridges and three tunnels under the river. The streets are wide and are laid out at right angles, many of them being adorned by rows of fine forest trees. The city measures 26½ miles in extreme length along the lake and from 6 to 14 in breadth. Of this the business center occupies less than a mile square. It contains most of the railroad stations, the post-office, court-house, art-institute, theaters, banks, principal hotels and stores, etc. The site of the city was originally unhealthy from its lowness, but a large portion of it has been artificially heightened (even while occupied by buildings) by 8 or 10 feet. Among the chief buildings are the new city-hall and court-house, the custom-house and post-office and the chamber of commerce. There is a university, which of recent years has had a great growth, and a large number of high-class colleges and seminaries. To supply the town with water tunnels have been constructed which extend from two to four miles under Lake Michigan, and convey the pure water of the lake into the town, where it is pumped up to a height of 160 feet and distributed. There are also a number of artesian wells. From its position at the head of the great chain of the American lakes and at the center of a network of railroads communicating with all parts of the Union, Chicago has always been more a commercial than a manufacturing city. There are extensive docks, basins, and other accommodation for shipping. The industries embrace iron-founding, brewing, distilling, leather, hats, sugar, tobacco, agricultural implements, steam-engines, boots and shoes. In commerce Chicago is second only to New York. It has an enormous trade in pork-packing, and is the greatest market for grain and timber in America. Other articles for which it is a center of trade are flour, provisions, wool, hides and clothing. It is practically the transportation center of the continent, over 100,000 miles of railroad centering here, while the great lakes afford a splendid channel for inland navigation. The great feature of the business of Chicago is its enormous dealings in foodstuffs. The Union Stock Yards, in the S. W. section of the city, are the largest in the world, cov-

ering over 400 acres of area and having accommodations for 75,000 cattle, 300,000 hogs, 80,000 sheep and 6000 horses. Immense quantities of meat are shipped from this point to every quarter of the globe, those of dressed beef alone amounting annually to more than 1,000,000,000 pounds. Here is also the greatest grain market in the world, approximately half the total supply of grain received at the eight leading grain markets of the country being handled here. Chicago was the pioneer in the construction of the lofty steel-frame business buildings now so common and known as 'sky-scrapers.' The Masonic Temple, one of the early examples of these, is 22 stories high and can accommodate 5000 occupants. There is a magnificent park system, embracing a considerable number of parks circling round the city from the lake and connected by parked boulevards 28 miles long. It is in contemplation to add to these by a number of diagonal boulevards traversing the city outward from its business center. To prevent the contamination of the water supply by the sewage of a city of so great extent if poured into the lake, a great drainage canal has been constructed from the Chicago River to Joliet on the Desplaines River, a distance of 30 miles. This has a minimum depth of 22 feet and for 10 miles is 200 feet wide and 35 feet deep. By its aid the sewage, diluted with lake water, is conveyed to the Mississippi, and the canal may ultimately be used as a shipping route from Lake Michigan to New Orleans.

Chicago has many public buildings noteworthy for architectural beauty, among them the Art Institute, the Public Library and the Newberry Library, while the Auditorium is one of the largest and best appointed public halls in the country. The Coliseum on South Wabash Street, the scene of national conventions and other gatherings, and the International Amphitheater at the Stock Yards, are the largest public halls in the city. The Field Museum of Natural History has a large and admirable collection. The University of Chicago has erected a handsome group of English Gothic buildings on the South Side, near Jackson Park. The finest residence streets are the Lake Shore Drive of the North Side and the boulevards.

Before 1831 Chicago was a mere hamlet surrounding Fort Dearborn (built in 1803). Its charter is dated March 4, 1837, its population being then 4170, but since then it has advanced at an altogether extraordinary rate. On October 9, 1871, a great fire occurred which burned down a vast number of houses and rendered about 150,000 persons homeless and destitute, the total money loss being estimated at $190,000,000. But the energy of its inhabitants and its favorable situation enabled it to recover in a surprisingly short time. The World's Columbian Exposition, held in Chicago in 1892–1893, celebrating Columbus' discovery of America, occupied a site of 633 acres on Lake Michigan, part of which is now Jackson Park. In 1880 the population was 503,185; (1890) 1,099,850; (1900) 1,698,575; (1910) 2,185,283; (1920) 2,701,705.

Chicago Heights, a city of Cook Co., Illinois, 27 miles S. of Chicago. It is an important manufacturing city, among its products being locomotives, steel rails and castings, glass bottles, chemicals, pianos, etc. Pop. (1910) 14,525; (1920) 19,653.

Chicago, University of, an institution for higher learning, in Chicago, occupying nearly 100 acres of land between the two principal parks of the South Park system. Several of its notable buildings—among them the double-towered Harper Memorial Library, housing more than 500,000 books, and Ida Noyes Hall for women students—front upon the Midway Plaisance. It was founded in 1890 and opened its doors to men and women students Oct. 1, 1892. In the academic year 1892-93 there were but 742 students. To-day there are over 10,000 students. The teaching staff has increased from a small group of men and women to about 400 of all ranks. Endowment has increased to $30,000,000, while the total assets in land, buildings and securities exceed $50,000,000. John D. Rockefeller, who aided in the first subscription, afterwards added largely to his gifts, contributing in all some $35,000,000. One of its important adjuncts is the Yerkes Observatory (q. v.).

Chich'ester, an episcopal and municipal city, and until 1885 a parliamentary borough of England, near the southwest corner of the country of Sussex, well built, with wide streets. Its old wall, still in good preservation and lined with lofty elms, gives it a very picturesque appearance. Its principal edifice is the cathedral, an ancient Gothic structure with a most graceful spire. Chichester takes its name (Cissaceaster) from the South Saxon king Cissa, who rebuilt it. Pop. 12,594.

Chickadee (chik'a-dē), the popular name in America of the black-cap titmouse (*Parus atricapillus*)

and other allied species, being derived from their note.

Chickahominy, a river in Virginia, rising about 20 miles N. W. of Richmond, flowing S. E. till it joins the James River. Near this river important battles took place during the Civil war, notably that of May 31–June 1, 1862, called the Battle of Fair Oaks, in which the Union advance, which had been thrown across the river, was attacked by the Confederates with great impetuosity and but for the arrival of reinforcements would have been totally destroyed.

Chickamauga (chick-a-mą'ga), a small tributary of the Tennessee River, joining the latter about 8 miles above Chattanooga. Near it was fought a great battle in the Civil war, on September 19-20, 1863, between the Federal forces under Rosecrans and the Confederates under Bragg. Early in September Rosecrans had taken the initiative and by a series of skilful maneuvers had compelled Bragg to fall back from Tullahoma into Chattanooga. Below here he crossed the Tennessee River and advanced through the passes of the long mountain ridges that stretch in nearly parallel lines to the south. This movement threatened Bragg's base of supplies at Dalton, Georgia, and compelled him to evacuate Chattanooga, which was thereupon occupied by the Union forces. The maneuver, owing to the difficult mountain country, necessitated the undue extension of Rosecrans' lines, and he made the sudden discovery that Bragg had 50,000 men within striking distance of the Union center under Thomas, which comprised not more than 20,000 and was separated by mountainous country from its two wings. Bragg had an excellent opportunity to crush his antagonist but he hesitated and while he hesitated Rosecrans, soon perceiving that the Confederate retreat was only apparent, succeeded in concentrating his forces in the valley of Chickamauga. Bragg, who had been heavily reinforced by Longstreet from Virginia, hastened to force a battle on Rosecrans in the hope of cutting off his retreat through the gaps in Missionary Ridge. The first day of the battle, September 19, was indecisive, Thomas holding his ground on the Federal left against a spirited attack by General Polk. About noon of the next day, through a misunderstanding of orders, a gap was left in the Union line near the junction of the center with the right wing. Longstreet, in command of the Confederate left, poured his troops into the gap, routing both the Union center and the Union right wing in flank, driving them back toward Chattanooga in wild disorder. The Union army was defeated and only the splendid leadership of General Thomas prevented a complete rout. His troops fought with a grim steadfastness and were handled in a masterly manner. Dodge, in his 'Bird's Eye View of the Civil War,' says: 'No more splendid spectacle appears in the annals of war than this heroic stand of Thomas in the midst of a routed army.' He retired to an eminence commanding the principal gap in Missionary Ridge, and there sustained attack after attack for six hours, remaining at nightfall master of the position, with one-third of his force dead or wounded. For his heroic stand Thomas earned the title of 'The Rock of Chickamauga.' But for him the battle would have been a Waterloo for Rosecrans. When the right moment came Thomas withdrew in good order, joining the defeated right and center. Chattanooga remained in Union hands, though the Confederates continued their efforts to regain it. Soon afterward General Grant was appointed to command all the forces west of the Alleghenies, and Rosecrans was removed from the command of the Army of the Cumberland, being succeeded by General Thomas.

This important victory for the Confederates was gained at the loss of about 17,800 men. The Federal losses, in killed, wounded and missing, were estimated at slightly over 16,000.

Chickamauga, Rock of. See *Thomas, General George Henry.*

Chickamauga National Military Park, a United States government reservation in Georgia near the Tennessee boundary, on the site of the battle of Chickamauga (1863). It was dedicated in September, 1895, and is maintained by Congress with the cooperation of Georgia and Tennessee.

Chickasaw Bluffs, or Bayou, a place near Vicksburg, Mississippi, the scene of a battle between the Federal forces under General Sherman and the Confederates under General Pemberton. It resulted in a victory for the Confederates, who repulsed Sherman's attempt to gain the rear of Vicksburg and join Grant. The Confederate losses were about 200, while the Federals lost some 2000 men.

Chickasaw Indians (chic'a-są), a tribe of American Indians of the Appalachian nation. In 1833 they gave up to the United States the last of their lands east of the Mississippi River, receiving as compensation a money indemnity and new lands on the

left bank of the Red River, in the Indian Territory (now in Oklahoma). The Chickasaws number about 5000. They made considerable advances towards civilization, and had a senate and house of representatives.

Chickasha (chik'a-shā), a city, county seat of Grady Co., Oklahoma, 38 miles S. W. of Oklahoma, on the Rock Island, Frisco and Santa Fe railroads. It is the seat of the Oklahoma State College for Women. The fertile Washita Valley, in which the city is situated, produces cotton, corn and wheat in abundance. It has cottonseed-oil mills, cotton gins and compress, large broom corn warehouse, great cattle-feeding pens, fertilizer plant, flour mill, etc. Much of its prosperity is due to the discovery of the Cement oil pool, 16 miles S. W. of the city. Wells are also drilling in the district. Pop. (1900) 3209; (1920) 10,179.

Chicken-breasted, having that form of breast, resulting from malformation or from carious disease or spinal weakness, in which the vertebrate column is curved forwards, giving rise to projection of the sternum or breast-bone.

Chicken-pox (VARICELLA), an infectious disease mainly confined to children. It commences with feverishness, and an eruption of pimples, which speedily become blebs filled with clear fluid and as large as split peas. Within a week these dry up into dark-colored scabs, which within another week have fallen off. The disease is never fatal, and has no evil results. A little opening medicine and a mild diet is all the treatment required.

Chickpea, the popular name of *Cicer arietinum*, which grows wild along the shores of the Mediterranean and in many parts of the East, producing a short, puffy pod with one or generally two small, wrinkled seeds. It is an important article in French and Spanish cookery, and the plant is cultivated in Europe, Egypt, Syria, India, Mexico, etc. When roasted it is the common *parched pulse* of the East. The herbage serves as fodder for cattle.

Chickweed, the popular name of *Stellaria media*, order Caryophyllaceæ, one of the most common weeds in cultivated and waste ground in Europe, flowering throughout the year. It has a procumbent more or less hairy stem, with ovate, pointed leaves, and many small white flowers. It is much used for feeding cage-birds, which are very fond both of its leaves and seeds.

Chiclana (chē-klä'nä), a town of Spain, in Andalusa, 12 miles S. E. of Cadiz, built of snow-white stone, contains a magnificent hospital, and has manufactures of linen, earthenware, etc. The sulphur baths, temperature 60°, are efficacious in cutaneous affections, and are much frequented. Pop. 11,500.

Chicle (chik'l) is the product of the fruit of the Sapodilla or Bully tree, grown in Brazil and the West Indies. The fruit resembles a bergamot pear in shape and size and is called naseberry. An elastic gum is obtained from it, and this is extensively employed in the manufacture of chewing gum. The imports of chicle to the United States in 1917 amounted to $3,198,153.

Chico (chē'ko), a city of Butte Co., California, 98 miles N. of Sacramento, in a fruit-growing, dairying, lumber and mining district. It has various manufactures including matches, electric cars, flour, etc. Seat of State Normal School. It owns a natural park of 2300 acres, presented to the city by General and Mrs. John Bidwell; extending into the Sierra Nevadas, containing many scenic wonders. Pop. (1920) 9339.

Chicopee (chik'ō-pē), a city of Hampden Co., Massachusetts, on the Connecticut River, at the mouth of the Chicopee, 4 miles N. of Springfield, with manufactures of cotton cloth, machinery, automobiles and tires and rubber goods, sporting goods, firearms, farm implements and many other articles. Pop. (1910) 25,461; (1920) 36,214.

Chicopee River, a river of Massachusetts, flowing into the Connecticut River. It is about 50 miles long and has an abundance of water power, which is utilized by Chicopee, Chicopee Falls (where Edward Bellamy was born), Ludlow, Three Rivers and other towns on its banks.

Chicory (chik'o-ri; *Chichorium*), a genus of composite plants, including the two important species of *C. Endivia* (endive) and *C. Intybus* (chicory or succory). The former, a native of the East Indies, is known under two sorts—the *curled* and the *Batavian*—both forming well-known salads by the blanching of their leaves. The *C. Intybus* or *chicory* is a common perennial plant, from 2 to 3 feet high, from the lower part of which milky leaves rise. The leaves are sometimes blanched, to be used as salad, in the same way as *C. Endivia*. But the most important part of the plant is its long, fleshy and milky root, which when roasted and ground is extensively used in Britain for mixing with coffee. Its presence in coffee may easily be detected by putting a spoonful of the mixture into a glass

of clear cold water, when the coffee will float on the surface, and the chicory separate and discolor the water as it subsides.

Chicoutimi (shē-kō-tēmē'), a town of Quebec province, Canada, on Saguenay River, at head of navigation. Pop. (1914) 6500.

Chieri (kē-ā'rē), an old town of North Italy, 8 miles E. S. E. of Turin, with a very large Gothic church, and manufactures of cotton, silk, etc. Pop. 15,454.

Chieti (kē-ā'tē), a town of Southern Italy, capital of province of same name, on a hill near the right bank of the Pescara. It is well built, is the see of an archbishop, and has manufactures of woolens, etc. Pop. 26,368.

Chiff-Chaff, one of the smallest of the European warblers, whose name has been derived from its twittering note of 'chiff-chaff; chery-churry.' Its entire length is about five inches.

Chigoe (chig'ō), or JIGGER, a very curious insect (*Pulex* or *Sarcopsylla penetrans*), closely resembling the common flea, but of more minute size, found in the West Indies and South America and the Southern States of the United States. It burrows beneath the skin of the foot, and soon acquires the size of a pea, its abdomen becoming distended with eggs. If these eggs remain to be hatched beneath the skin great irritation and even troublesome sores are sure to result. The insect must be extracted entire, and with great care, as soon as its presence is indicated by a slight itching.

Chihuahua (chē-wä'wä), a city of Mexico, capital of the state of the same name, generally well-built, and supplied with water by a notable aqueduct. It is surrounded by silver mines, and is an important entrepôt of trade. Pop. about 40,000.—The STATE is bounded on the N. by the United States and on the N. E. by the Rio Grande del Norte; has a healthy climate, and is rich in silver mines. Pop. 405,265.

Chilaw (chi-lą'), a seaport town on the west coast of Ceylon, 45 miles N. by W. of Colombo, formerly a place of greater importance than it is now. Pop. about 3000.

Chilblains (chil'blānz) are painful inflammatory swellings, of a deep purple or leaden color, to which the fingers, toes, heels, and other extreme parts of the body are subject on being exposed to a severe degree of cold. The pain is not constant, but rather pungent and shooting at particular times, and an insupportable itching attends it. In some instances the skin remains entire, but in others it breaks and discharges a thin fluid. The general treatment should be one prescribed, and extremes of heat and cold avoided.

Childbirth. See *Birth.*

Child Labor. Only within quite recent years has the necessity for strict regulation under State and Federal laws been recognized in the matter of children's labor. It was as late as 1894 before the State of Massachusetts crystallized into law the demands of the social workers for an adequate measure of protection for the children employed in industries. This pioneer law limited the employment of children under thirteen in textile mills. Soon after, Connecticut and then Pennsylvania and New York followed suit, until to-day twenty-six States have passed highly protective laws. With the question of Child Labor is involved that of illiteracy, which is largely governed by the character of the legislation in the various States. In 1900 there were 510,678 illiterate children in thirteen States, in which relatively backward legislation existed, as compared with 19,269 such children in the remaining 39 States. The advocates of strict legislation urge the evil physical effects upon young children engaged in work for several hours daily and those which develop as a result in later years. The first broad consideration of Federal legislation was due to the Beveridge Child Labor Bill. This bill was substantially the same in principle as that passed by Congress in 1916, but it failed of passage. It was only in 1912 that a Children's Bureau was established in the Department of Commerce and Labor. The laws of the different States vary in detail, generally in the South they are less favorable, though in Tennessee and Louisiana, the restrictions on the employment of children are stricter than in some other Southern States. The general tendency of legislation has been to lessen the employment of children under fourteen. The chief objections raised to the Federal law of 1916 are based on the economic condition of the cotton mill industry, which has been so largely developed in that section in recent years, and which it is claimed must have access to ample cheap labor to maintain itself in the face of advantages possessed by the mills of New England. The constitutionality of the Federal bill was questioned, and after a long legal fight it was declared unconstitutional by the U. S. Supreme Court, on the ground that it invaded State's rights in seeking to prohibit the transportation

in interstate commerce of articles manufactured by children. A new child-labor bill, setting the same standards as the first bill, but invoking the taxing instead of the interstate power, was passed by Congress in 1918 and became effective in April, 1919.

Childebert (chil-de-bért), the name of three kings of the Merovingian dynasty, France. The first, a son of Clovis, 495-558; the second, a son of Siegbert and Brunehaut, 570-596; the third, surnamed *the Just*, a son of Thierry I, 683-711.

Children's Bureau, a United States government bureau in the Department of Labor. It was established in 1912 and placed in the Department of Commerce and Labor under the management of Miss Julia C. Lathrop.

Childress, a city, county seat of Childress Co., Texas, 220 miles N. W. of Fort Worth, on the Fort Worth & Denver Railway, in a district producing cotton, corn, wheat, etc. The county leads the State in pure-bred registered hogs. The Fort Worth & Denver railroad shops are here; and there are cotton gins, grain mills and elevators. Pop. (1920) 5003.

Childs, GEORGE WILLIAM (1829-94), an American publisher and philanthropist, born in Baltimore. In 1864 he bought the Philadelphia *Public Ledger*, then a small paper, and made it one of the most influential of newspapers. He was widely known for his public spirit and philanthropy.

Chili. See *Pechili*.

Chili, or Chile (chē'lā, chil'li), a country of South America, extending along the Pacific coast from lat. 18° S., nearly to Cape Horn, and including Chiloé and many other islands and part of Tierra del Fuego. It is bounded on the N. by Peru (the river Sama being the boundary), on the N. E. and E. by Bolivia and the Argentine Republic, from which it is separated by the chief range of the Cordilleras. Its length from N. to S. is about 2800 miles; its breadth, on an average, 120 miles; area 307,620 sq. miles, divided into twenty-three provinces and one territory; population, about 5,000,000. By the war with Peru and Bolivia, which terminated in 1882, Chile gained all the seaboard of Bolivia, and annexed also the Peruvian provinces of Tarapacá, Tacna and Arica (the latter two for ten years, after which a plebiscite was to decide whether they should go to Chile or Peru. Chile still retains them). The chief towns are Santiago (the capital) and Valparaiso. The rivers are numerous; the principal ones are the Biobio, the Valdivia, Lontue, Maule, Itata and Chuapa or Illapel. The surface is greatly diversified, but rises in elevation as it recedes from the coast and approaches the Andes, along the watershed of which a great part of the boundary runs. Some of the summits here rise to 20,000 feet or more, but the elevation decreases towards the south. Chiloé and numerous other islands fringe the coast in the south. Earthquakes are common, those of 1822, 1835 and 1868 being particularly violent. In the Chilean Andes there are twenty volcanoes at least, some of which are still in a state of intermittent activity. The climate is remarkably salubrious. In the northern provinces it rarely rains—in some parts perhaps never; in the central parts rain is sufficiently abundant, while in the extreme south there is even an excess of moisture. Among the minerals of Chile are gold, silver, copper, lead, iron, zinc, antimony, manganese, arsenic, tin, sulphur, alum, salt and cubic niter. Silver and copper are the two most important metals. The copper mines are most numerous in the northern districts. Nitrate of soda or Chile saltpeter, is a great source of wealth. Coal is mined at several places. Though possessing many fertile tracts, a great portion of Chile is incapable of cultivation, being naked and mountainous. The province of Atacama is especially destitute of vegetation. From the 29th degree of latitude southwards green valleys and fertile tracts appear. the character of the vegetation getting always richer, till in the southern provinces we find the sides of the Andes clothed with forests and with herbaceous plants and flowers of the richest and most beautiful hues. In some of the northern districts maize is cultivated; in the southern districts wheat and barley are the chief agricultural products. Fruits are abundant—apples, pears, apricots, peaches, figs, grapes, oranges, watermelons, etc. The spread of European plants has been so great in some places as to crowd out native species, and cultivation is rapidly carrying this farther. The wild animals include the guanaco, puma, or American lion, the chinchilla, coypu, deer, etc. Cattle are raised in great numbers, from 4000 to 20,000 being sometimes reared on one ranch. The manufactures are of little importance, but include cordage, soap, copper wares, leather, brandy, etc. The commerce is increasing rapidly. By far the greater part of the foreign trade is with Great Britain. Mineral products form five-sixths of the total exports, the principal article being the native nitrate of soda, the value of which alone was

$22,500,000 in 1884 and $75,000,000 in 1910. The value of exports in 1912 was $139,878,201, and of imports $122,075,994, a total of $261,954,195. Accounts are in pesos, the gold peso being the monetary unit, having a value of about 36 cents. In 1912 Chile's railway system had a total length in miles of 6738.

Chile is a republic, and is considered the best regulated in South America. It is under a president elected for five years and a council of state. The legislature is composed of a senate elected for six years, and a house of deputies elected for three years. The estimated revenue for 1912 was $193,261,000, the estimated expenditure $375,147,000, with an estimated war strength of 250,000. The total debt, home and foreign, 1911, was $636,822,000. The war strength of the army is 85,000. There is an efficient navy of 6 battleships and cruisers, and a fleet of torpedo boats and submarines. The Chileans are mostly of Spanish or Indian descent. They are generally fond of agricultural pursuits, and possess a considerable amount of energy and enterprise. Schools and colleges have been established, and the extension of the benefits of education has been of late one of the constant aims of the government, elementary education being now gratuitous. The Roman Catholic is the established religion of Chile, but the members of other denominations are allowed to erect edifices in which to worship. The part of Chile lying S. of the river Biobio (or about lat. 38° S.) is inhabited chiefly by Indians. The Araucanians inhabit the region lying between the rivers Biobio and Valdivia, and long maintained their independence, till in 1882 they became subjects of the Chilean government.

Chile originally belonged to the Incas of Peru, from whom it was wrested by the Spaniards under Pizarro and Almagro in 1535. From this period Chile continued a colony of Spain till 1810, when a revolution commenced, which terminated in 1817 in its independence. Several internal commotions have since occurred; but the country has been free from these compared with other South American states. A war, begun with Spain in 1865, led to the blockade of the coast by the Spanish fleet, and the bombardment of Valparaiso in 1866. In 1879 a war broke out with Bolivia and Peru, in reference to the rights of Chile in the mineral district of Atacama. This war was virtually finished in 1881, and the victorious Chileans gained a large accession of territory from both Bolivia and Peru. In 1891 an insurrection, headed by influential members of Congress, caused by dissatisfaction with President Balmaceda's administration, resulted in his overthrow. Jorge Montt succeeded him. In 1896 Federico Errazuriz became president. During the presidency of German Riesco (1901-06) the boundary dispute with Argentina was settled. Ramon Barros Luco became president in 1911, in which year the Alsop Claim, a dispute of 25 years' standing between Chile and the United States, was settled, and was succeeded by Juan Luis Sanfuentes in 1916. Chile remained neutral during the European war.

Chilkoot Pass, a pass over the coast range of the Rocky Mountains in Alaska. It begins at the town of Dyea and attains a height of 3502 ft. It was once a principal route from the Alaskan coast to the Yukon gold fields.

Chillan (chil-yän'), a town of Chile, capital of the province of Nuble, in an angle between the Chillan and Nuble, connected by rail with Talcahuano and Santiago. It is a thriving place, with a large trade in cattle and grain. Pop. (1910) 45,000.

Chilled Iron, iron cast in metal molds called *chills*, where, on account of the rapid conducting of the heat, the iron cools more quickly on the surface than it would do if cast in sand. Chilled iron is whiter and has a harder surface than iron cast in any other way.

Chillicothe (chil-e-koth'e), a city, county seat of Livingston Co., Missouri, 87 miles N. E. of Kansas City, on three railroads. It is an educational and industrial center, with about 100 industrial, jobbing and manufacturing plants. Pop. (1920) 6525; with student enrolment, and suburbs, 10,230.

Chillicothe, a city, county seat of Ross Co., Ohio, on the Scioto River, 43 miles S. of Columbus. It has manufactures of book and magazine paper, shoes, pottery, etc. It is centrally located and has excellent transportation facilities. From 1800 to 1810 it was the capital of Ohio. Pop. (1910) 14,508; (1920) 15,831.

Chillingworth, WILLIAM (1602-44), an English theologian, born at Oxford. He was made chancellor of the bishopric of Salisbury, and in the civil war supported the king's cause. He published many sermons; and his *Religion of Protestants* formed an epoch in English theology and gave him lasting fame.

Chillon (shē-yōn), a castle of Switzerland, on the Lake of Geneva, 6½ miles S. E. of Vevay, once an important stronghold of the Counts of Savoy, and the prison-house of Francis

Bonnivard, prior of St. Victor, Geneva, from 1530 to 1536. It has acquired interest from Byron's poem, *The Prisoner of Chillon*.

Chilo (kī'lō). See *Chilon*.

Chiloé (chēl-wā'), a province and island of Chile. The province comprehends the island of Chiloé, together with a number of other islands, and a portion of the mainland. The island of Chiloé is for the most part covered with dense forests, but large tracts of it are still unexplored. The chief town is San Carlos, or Ancud. The exports consist chiefly of timber from the forests of the island and the mainland. The climate is healthy but very wet. Area of the province, 8593 sq. miles; pop. 91,022.

Chilognatha, CHILOPODA. See *Cheilognatha*.

Chilon (kī'lon), or CHILO, one of the so-called seven wise men of Greece. He flourished about the beginning of the sixth century B.C., and was a native of Sparta, and one of the Ephori, or chief magistrates. A collection of his sayings is extant.

Chimæra, CHIMERA (ki-mē'ra), in classical myth, a fire-breathing monster, the foreparts of whose body were those of a lion, the middle of a goat, and the hinder of a dragon. Thus the name came to be used for an unnatural production of the fancy.

Chimæra (ki-mē'ra), a genus of cartilaginous fishes. Almost the only known species is the *Chimæra monstrōsa*, which inhabits the northern seas, and is sometimes called *king of the herrings*, and, from its two pairs of large teeth, *rabbit-fish*. There is but one gill-opening, and the tail terminates in a point, the fish having, on the whole a singular appearance. It seldom exceeds 3 feet in length. The name *Gold and Silver Fish* is sometimes applied to the northern chimæra because of its gorgeous coloring. In the southern hemisphere there is another species of chimæra (*Callorhynchus antarctic*), called also *elephant-fish*, so named from its prolonged snout, which is bent backward into a hook-like form. The color is satiny-white mottled with brown, and in size it resembles the northern chimæra.

Chimborazo (chim-bō-rä'zō), a mountain of Ecuador, in the province of Quito, about 90 miles S. by W. of Quito; lat. about 2° S. Though not the loftiest summit of the Andes, it rises to the height of 20,703 feet above the level of the sea, and is covered with perpetual snow 2600 feet from the summit and upwards. In 1880 it was ascended to the top for the first time by Mr. E. Whymper.

Chimere (shi-mēr'), the upper robe to which the lawn sleeves of a bishop are attached.

Chimes (chīms), a species of music, mechanically produced by the strokes of hammers against a series of bells, tuned agreeably to a given musical scale. The hammers are lifted by levers acted upon by metallic pins, or wooden pegs, stuck into a large barrel, which is made to revolve by clockwork, and is so connected with the striking part of the clock mechanism that it is set in motion by it at certain intervals of time, usually every hour, or every quarter of an hour. The chime mechanism is sometimes so constructed that it may be played like a piano, but with the fist instead of the fingers.

Chimney (chim'ni), an erection generally of stone or brick containing a passage by which the smoke of a fire or furnace escapes to the open air. In this sense the first chimneys we hear of are no earlier than the middle ages. The longer a chimney is the more perfect is its draught, provided the fire is great enough to heat the column of air in it, because the tendency of the smoke to draw upwards is in proportion to the difference of weight between the heated air in a chimney and an equal column of external air. Smoky chimneys may be caused either by the presence of other buildings obstructing the wind and giving rise to irregular currents of air, or by improper construction of the fireplace and adjacent parts of the chimney. The first may generally be cured by fixing a chimney-pot of a particular construction, or a revolving cowl, on the chimney top, in order to prevent the wind blowing down; in the second case the narrowing of the chimney throat will generally create a better draught.

Chimney-piece, the assemblage of architectural dressings around the open recess constituting the fireplace in a room.

Chimney-swallow. See *Swallow*.

Chimpanzee (chim-pan'zē), the native Guinea name of a large West and Central African ape (*Troglodytes niger*) belonging to the anthropoid or manlike monkeys, and to the same genus as the gorilla. When full grown it is sometimes about 5 feet high, with black hair, and is not so large and powerful as the gorilla. Like

the orang, it has the hair on its forearm turned backwards, but differs from it in having an additional dorsal vertebra and a thirteenth pair of ribs. It walks erect better than most of the apes. It feeds on fruits, often robs the gardens of the natives, and constructs a sort of nest among the branches. It is common in menageries, where it shows much intelligence and docility. It has a great many human characteristics and becomes readily domesticated. The keeper of one of the great zoological gardens tells of one chimpanzee who had been trained to some extent, conducting himself very creditably at the dinner table and at receptions held in his honor. He was very fond of the costumes made for him, and had many of the characteristics of a fop. When a suit began to be faded or torn, he would express his disgust by sulking; and on the appearance of the new clothes he would cease the plaintive sounds that had expressed his grief and after being re-arrayed would beg for the discarded raiment and tear it to shreds to prevent the possibility of his being compelled to wear it again. The head of the chimpanzee is remarkable for the large development of the ears, which stand prominently from the sides of the head.

China, REPUBLIC OF, a political division of Asia, extending from latitude 18° to 50° N., and from longitude 74° to 134° E., area 3,341,515 square miles, which is greater than that of the continent of Europe. It consists of China Proper (which now includes Manchuria), and the outlying dependencies of Sinkiang, Chinese Turkestan and Tibet. It is bounded N. W., N. and N. E. by Asiatic Russia, along a frontier extending some 6000 miles, E. by Korea and those parts of the Pacific known as the Yellow Sea and China Sea; S. and S. W. by the China Sea, French Indo-China, Upper Burma and the Himalayan states. It is narrowest in the extreme west. Chinese Turkestan, along the meridian of Kashgar (76° E.), has a breadth of but 250 miles. It rapidly broadens and for the greater part of its area is over 1800 miles across in a direct N. and S. line. Its greater length is from the N. E. corner of Manchuria to the S. W. confines of Tibet, a distance of 3100 miles in a direct line. Its seaboard, about 5000 miles following the indentations of the coast, is wholly in China Proper. China Proper occupies the eastern and southeastern part of the republic, and including the three Manchurian provinces of Feng-tien, Kirin, and Hei-lung-chiang, is divided into twenty-one provinces.

AREA AND POPULATION OF CHINA.

Province	Area, sq.m.	Population
Chekiang	36,680	17,000,000
Chili	115,830	32,571,000
Fokien (Fukien)	46,332	13,100,000
Honan	67,954	25,600,000
Hunan	83,398	23,600,000
Hupeh	71,428	24,900,000
Kansu	125,483	5,000,000
Kiangsi	69,498	14,500,000
Kiangsu	38,610	17,300,000
Kwangsi	77,220	6,500,000
Kwangtung	100,000	27,700,000
Kweichau	67,182	11,300,000
Nganhwuy	54,826	17,300,000
Shan-si	81,853	10,000,000
Shan-tung	55,984	29,600,000
Shen-si	75,290	8,800,000
Sse-chuen	218,533	23,000,000
Yun-nan	146,714	8,500,000
Manchuria	363,700	14,917,000
Total for China and Manchuria	1,896,515	331,188,000
Sinkiang and Chinese Turkestan	981,800	2,491,000
Manchurian Military Organisation	.....	1,700,000
Other Dependencies	.....	760,000
Tibet	463,200	6,500,000
Grand Total	3,341,515	342,639,000

Peking is the capital. There are many large and populous cities.

Physical Features.—Great part of the country is not well known. The coast line forms an irregular curve of about 2500 miles. It is not deeply penetrated by gulfs, the only one of great extent being that of Pe-chi-le in the northeast, but numerous indentations of sufficient dimensions to form safe and capacious roadsteads are found in every quarter. It is characterized by a fringe of islands and islets, the largest of which are Formosa and Hainan. The Gulf of Pe-chi-le, the Yellow Sea and the China Sea wash the eastern and southeastern shores, and are subject to the destructive storms called *typhoons*. The inland boundaries are formed mainly by Tonquin, Burmah, Tibet, and, on the north, partly by the Great Wall separating China from Mongolia, one of the most remarkable of human structures, being an artificial barrier 1500 miles long. Two-thirds of the interior are estimated to be mountainous. The general slope is from west to east, and the mountains are a continuation of those of Tibet and Central Asia. The great Kuen-lun range throws off branches, the Tsing-Ling, Funiu-shan and Mu-ling, which, running eastward between the great valleys of the Hoang-ho and Yang-tse-kiang, traverse almost the whole breadth of China. Further north the Nan-shan branch of the Kuen-lun range runs under various

names (Kuliang, Alashan, Inshan, etc.) along the northeast of China till it reaches the frontier of Manchuria, north of Peking. The third great mountain system of China is in the southeast, where extensive chains such as the Nan-shan, the Ta-yu-ling, and Pu-ling stretch on the south side of the Yang-tse-kiang all the way from the highlands of Yun-nan to the eastern seaboard. Between these mountain systems, and following courses which may be roughly described as parallel, run the two great rivers of China, the Hoang-ho and the Yang-tse-kiang. Here lie the central and richest provinces of China. On both sides of the lower Hoang-ho is an immense delta plain, consisting generally of a deep alluvial soil of unparalleled fertility. As they approach the seacoast the two rivers are connected by the Grand Canal, 700 miles in length, thus completing a magnificent system of inland navigation. The Hoang-ho has changed its lower course several times, and is subject to tremendous and disastrous floods. Besides these rivers and their numerous tributaries, the most deserving of notice are the Se-kiang in the south, of considerable size, but still more commercial importance, having at or near its embouchure Canton, Hong-Kong and Macao; and the Pie-ho, which, though much smaller, forms a waterway between Peking and the Gulf of Pe-chi-le. There are a number of lakes, mostly of no great size; the largest is Tung-ting, near the center of China, with a circumference of about 270 miles. A remarkable feature of the surface of Northern China is the deposit of *loess*, a brownish-yellow earth of great fertility, which covers an immense area both of mountain and valley, and enables agriculture to be successfully carried to the height of 7000 or 8000 feet.

Climate.—The greater part of China belongs to the temperate zone, but it has what is called an excessive climate. At Peking in summer the heat ranges from 90° to 100° in the shade, while the winter is so cold that the rivers are usually frozen from December to March. At Shanghai, lat. 31° 20′, the maximum temperature reaches 100°, and the minimum falls at least to 20° below freezing point (12° Fahr.). In the south the climate is of a tropical character, the summer heat rising to 120°. Here the southwest and northeast monsoons blow with great regularity, and divide the year between them. Among the greatest scourges of the country are the dreadful gales known as typhoons, from the Chinese Ta-fung, or 'great wind.' They never fail to commit great devastation, though happily they always give such timely notice of their approach that preparations can be made. The Hoang-ho and Yang-tse-kiang basins have a pretty equable temperature, due to the soft moist winds of the Pacific.

Productions.—China is well supplied with minerals, including gold, silver, copper, iron and other metals, and there are very extensive coal-fields, though the quantity raised from them is comparatively small. Salt is abundant, and there are inexhaustible beds of kaolin, or porcelain earth. Among animals it is difficult to mention any that are characteristic of the country; many of them are identical with or differ but little from those of Europe. In the south and southwest the tiger, the rhinoceros and elephant are found; bears are common in many parts; other carnivora are the wild cat, badger, lynx, marten, etc. Camels and elephants are used in a domestic state, but the chief domesticated animal is the buffalo. The horses are of a poor breed. Among birds the most beautiful are the gold and silver pheasants. Fish swarm in all inland waters as well as on the coast, the natural supply being immensely increased by artificial means. As regards the flora of China, it is tropical in the south (cocoa and sago palms, banana, pandanus, etc.), subtropical farther north, and still farther north a number of plants and trees prevail identical with or closely akin to those of middle Europe. Flowering plants, shrubs and trees are so exceedingly abundant as to form a feature. The bamboo, from the immense number of uses to which it is put, is one of the most valuable trees. Oaks, the chestnut, hazel, pines, yew, walnut, etc., are among forest trees. Wax and camphor trees abound. Azaleas are exceedingly numerous; other flowering plants are the camellia, rose, passion-flower, cactus, lagerstrœmia, etc. Fruits are abundant and varied. The soil, especially of the country comprising the two great river basins, is extremely fertile, and agriculture has always been held in high veneration in China. Rice, as the principal food of the people, is the staple crop. The rich alluvial plains which cover a great part of the surface are admirably adapted for its culture, and by careful management yield amazing crops. In the north there is a variety called dry-soil rice, which is cultivated like any other cereal. Wheat, barley, and millet are the other chief grain crops. Other crops are maize, buckwheat, a great variety of beans, peas and pulse gener-

ally, sugar-cane, tobacco and vegetables in endless variety, including potatoes, turnips, etc., and at the ports the best European and American vegetables. Varieties of the cabbage tribe are extensively cultivated for the oil extracted from the seeds. Three plants of the greatest economical importance to China are the mulberry, cultivated to provide food for silkworms, cotton and tea, the last formerly regarded as exclusively a Chinese product. The opium poppy was extensively grown until recent years, when awakened public sentiment enforced legislation to prohibit its cultivation.

Manufactures.—In arts and industry the Chinese have made considerable progress. One peculiar feature in their processes is the general absence of machinery, and the preponderance of manual labor. Among the chief industries is the silk manufacture, which produces some varieties of stuffs unsurpassed anywhere. Everybody wears silks; it is the prescribed attire of high officers. The finer kinds of it form the ordinary dresses of the opulent, while the poorest manage to deck themselves in coarser, if not on common, at least on gala days. The embroidery of silk is carried on to an amazing extent. Cotton goods are also largely made, though great quantities of European and American manufactures are also imported. Flax is not grown, but a good substitute for it is found in the fibers of two or three plants, from which the beautiful grass-cloth, similar in appearance to linen, is extensively woven. Woolens are made only to a limited extent. The porcelain of China has been famous from the earliest periods, and the manufacture of the finest forms of it was long known to the Chinese alone, though their productions are now surpassed by those of Europe. In lacquered ware the Chinese continue unsurpassed. In working in metals they have only attained to mediocrity. The metallic products most deserving of notice are gongs, mirrors, statuettes in copper and bronze, and various kinds of carved, chased and filigree work, both in gold and silver. In a great number of minor articles the workmanship is exquisite—fans, card-cases, seals, combs, chessmen of wood, ivory, mother-of-pearl, tortoise-shell, etc. Paper is made of a great variety of substances, and the art of making it—like various others—was practised in China long before Europe acquired it.

Commerce.—The inland trade of China, aided by its vast system of water communication, is of incalculable magnitude, the rivers and canals literally swarming with junks, barges, and boats of all sizes. Roads, however, are few and bad, though railways recently have received an impetus. Telegraphs are being rapidly constructed by the government and the telephone has been introduced. Under a new postal system letters can be sent all over the provinces at a uniform rate. Prior to 1842 China rigorously opposed foreign trade; but the number of treaty ports has been gradually increased, and commerce has shown a steady growth. The chief ports are Shanghai, Canton, Hankow, Swatow, Tientsin, Ningpo and Foochow. The main articles of export are raw and manufactured silk and the soya bean; the main imports, clothing, tobacco, metals and metal goods. Tea, formerly the staple of China's export trade, has suffered a decline through Indian competition and is now only third on the list of exports. The total exports and imports usually amount to more than $400,000,000. In the year 1911 the exports amounted to $377,000,000; the imports, $471,000,000. The usual unit of money is the *tael*, the value of which varies from year to year; in 1912 the Canton *tael* was worth $0.738. According to the new currency system (February 10, 1914) only the central government has the power of minting money. The system includes the silver *yuan* or dollar, half *yuan*, 20-cent piece, 10-cent piece (*chio*); the nickel 5-cent piece; and the copper 2-cent, 1-cent (*fen*), 5-*li*, 2-*li* and 1-*li* pieces.

People.—The Chinese belong to the Mongolian race, but in them its harsher features, as represented in the genuine Tartars, are considerably softened. They are generally of low stature, have small hands and feet (the last artificially made so small in the women as to become a deformity), a dark complexion, a wide forehead, black hair, eyes and eyebrows obliquely turned upwards at the outer extremities. In bodily strength they are inferior to Europeans, but superior to most Asiatics, and their great assiduity and patient endurance of fatigue make them valuable as laborers. In their moral qualities there is much that is admirable. They are strongly attached to their homes, hold age in respect, toil hard for the support of their families, and in the interior, where the worst kind of foreign intercourse has not debased them, exhibit an unsophisticated simplicity of manners which recalls the age of the patriarchs. The Chinese use great politeness in their intercourse with each other; but there is perhaps a want of frankness and sincerity. They scrupulously avoid all contradiction and offensive expressions in conversation. Gam-

bling is a universal vice. Drunkenness has hitherto been rare among them, though the habit of opium-smoking has become much extended. But, with many vicious characteristics, the Chinese are preserved from degeneration by their universal frugality and thrift. Hard work, done in the most uncomplaining way, has become second nature with them. Filial piety is also a striking feature of their character, and is, in fact, the principle upon which Chinese society is constituted. They have chambers set apart for the worship of their ancestors, where religious ceremonies are regularly performed. In the traditional Chinese social system four

Chinese Mandarin, Lady, Boy, Female Attendant, Soldier and Bird's-nest Seller.

classes are distinguished: the literary, the agricultural, the artisan and the trading class. Hereditary nobility in the European sense scarcely exists, and official position has always been more highly esteemed than birth.

Language and Literature. The Chinese is the most important and most widely spread of the so-called monosyllabic languages of Eastern Asia, in which each word is uttered by a single movement of the organ of speech. There is no alphabet, each word being represented by a single symbol or character. These written characters appears to have been originally hieroglyphics or rude copies of the object designed to be expressed by them; but the hieroglyphic features have almost entirely disappeared, and many of the symbols are formed of what seems to be an arbitary combination of lines, or are built up of other symbols combined. In writing or printing the characters are arranged in vertical columns, to be read from top to bottom. A new alphabet for China is significant of the present spirit of progress. The old system of writing required the student to memorize no fewer than 8000 ideograms. Steps were taken some time ago to construct a phonetic alphabet, the task being entrusted to a learned committee composed of Chow-Hi-Chu, the Secretary of the Chinese Legation at Rome, the adjunct secretaries Wan and Chou, and Solonghello, professor of Chinese and Japanese at the School of Oriental Languages in Naples and one of the greatest polyglots in the world. These gentlemen have studied all known alphabets and combined them to form one which shall represent every sound in the Chinese tongue. The alphabet adopted by them consists of forty-two characters, of which twenty-three are vowels and nineteen are consonants. With these characters it is possible to write all the words used in the vulgar tongue in any part of China. The art of making paper is said to have been known in the first century after Christ; printing from wooden blocks in the seventh or eighth century, hundreds of years before these valuable arts were re-invented in Europe.

The Chinese literature is now very extensive. It is remarkable for its antiquity, for the variety of subjects presented, for the accuracy of its historical statements and for its ennobling ideals. For convenience the literature is divided into four classes—first, the Chinese classics, together with lexicographical and philological work; second, histories of various kinds; third, philosophy, religion, the arts and sciences; fourth, poetry and works dealing with poetry. As literary eminence has been for ages the sure avenue to the highest honors and offices of the state, the literati have been the gentry, the magistrates, the governors, the negotiators and the ministers of China.

The Chinese classics are the Confucian books and a few others, on which an amount of painstaking commentary has

been expended; the histories are those of China herself and of the few foreign peoples with whom she has had any intercourse; the works of the third class are those of the literati of many ages and include the works of Taoism and Buddhism; the poetry is rich in ballads, lyrical and descriptive pieces, eulogies and elegies, but contains no great epic. Some of the historical romances and novels are of very high order, although fiction has never been regarded by the Chinese as an integral part of literature proper.

Education. Persistent missionary zeal and the necessity of military reorganization must be given the credit for recent progress in education. Until 1905 the time-honored study of the Chinese classics formed the only passport to State employment, and these were therefore the textbooks in general use. Gradually, however, European methods supplanted Chinese. One of the first problems of the new republic was to adopt a sound educational system, and in 1912 the Ministry of Education summoned a conference of teachers and educators, upon the recommendations of which the present system is based. Every city, town and village is required to establish primary schools, which, with the 'middle' schools, are to be controlled by the provinces in which they are located. Technical and normal schools are also provided, these to be controlled by the Ministry of Education. The plan includes four government universities—at Peking, Canton, Nanking and Wu-chang, with courses in literature, science, medicine, law, commerce, agriculture. Education is made compulsory and emphasis is laid on the education of girls, on manual training and hygiene, and on the observance of Sunday as a school holiday.

Religion. The chief religions in China are Confucianism, Taoism and Buddhism, the last of latest origin. Among the great masses of the people a form of Buddhism prevails, or a curious mixture of religious ideas and forms. Attempts to introduce Christianity were made by the Nestorians as early as the 6th century, but it was not until the arrival of the Jesuits with Father Ricci in 1582 that the faith gained any foothold. The first Protestant minister was Robert Morrison, who arrived in 1807. Christian missions, both Roman Catholic and Protestant, are established in every province of China, and freedom to embrace the Christian faith has been guaranteed by the Chinese government since 1860. The number of Roman Catholics in China is estimated at 1,000,000; the number of Protestants at 250,000. In 1914 a bill prescribing the worship of Heaven and of Confucius was passed by the Administration Council, thus establishing a state religion, though not precluding freedom of worship.

Government. The Chinese government, based upon that of the family, was for many centuries an absolute monarchy. The emperor united in his person the attribute of supreme magistrate and sovereign pontiff, and as the 'Son of Heaven' was in theory accountable only to heaven. For more than 2000 years he was the supreme head of the state, legislating by edict in matters great and small. In the seventeenth century the Ming Dynasty was overcome by the Manchus of the north. The traditions of the old autocracy were preserved by the Manchus, but for many years previous to the revolution of 1911, the Civil Service had become the real power in the empire, while the central authority was but little exercised over the provincial and district administration. Many reforms were initiated or promised in the last few years of the empire; an executive body was created and a legislative body promised. By the revolution of 1911–12 the autocracy of the emperor and the power of the bureaucracy were merged into a republican form of government. The executive power is vested in a president and vice-president, a premier and ten secretaries of state; the legislative in an *Advisory Council* of 126 members (five from each of the twenty-five territorial divisions and one from the district of Koko-Nor).

Railways. Doctor Sun Yat Sen, formerly provisional President of the Chinese Republic, has been authorized by the new Government to organize a corporation for the construction of 70,000 miles of railways in China. In 1875 there was not a mile of railway in China; in 1912 the total mileage was 8000, of which some 6000 miles were operated and 2000 miles more projected. About two-thirds of the mileage is under foreign control—one-third in the hands of Russia and Japan, another third divided among France, Germany, England, Belgium and the United States. Of lines built chiefly with Chinese capital by Chinese engineers, the most significant is the Peking-Kalgan Frontier Railway, built under the direction of a Chinese graduate of Yale. The valuation of all lines not owned by China, the sum which China would be obliged to pay were the Government to secure control, is estimated at $280,000,000, or about one-third of the outstanding debt of the republic.

Army and Navy. In the matter of armed strength China is far behind European nations. The Chinese military force consists of a peace strength of 180,000; reserve of 100,000, making a total of 280,000 war strength. Under English officers their training and discipline have much improved of late, and the newest kinds of rifles and cannons have been imported from Europe. Within a few years China will have a standing army of well-drilled and well-armed soldiers 350,000 strong, and this army will probably be rapidly increased; so that in any future war this country will be able to take care of its interests in the most approved modern style. The soldiers are being taught to read and write, another innovation, and military and naval schools have been established, where officers may be instructed in the principles of their profession. The navy consists of two fleets—one for rivers and another for sea; but though it numbers many vessels, it is not very efficient, and is scarcely able to clear the Chinese coast from the pirates who infest the numerous creeks and islets. It has lately, however, been much strengthened by a number of steel corvettes built in England and Germany. The full complement of the navy is about 2500. A scheme for the reorganization of the Chinese navy provides for the overhauling of the dockyards, colleges, schools, and the personnel generally, and later for the building of new battleships, cruisers, etc.

History.—The early history of the Chinese is shrouded in fable, but it is certain that civilization had advanced much among them when it was only beginning to dawn on the nations of Europe. The Chow dynasty, which was founded by Woo-wang, and lasted from about 1100 B.C. to 258 B.C., is perhaps the earliest that can be regarded as historic, and even of it not much more is historic than the name. Under Ling-wang, one of the sovereigns of this dynasty, Confucius is said to have been born, some time in the sixth century B.C. During the latter half of the period during which this line of sovereigns held sway there appear to have been a number of rival kings in China, who lived in strife with one another. Chow-siang, who was the founder of the Tsin dynasty, from which China takes its name, gained the superiority over his rivals. He died in 251 B.C. His great-grandson, a national hero of the Chinese, was the first to assume the title of 'Hoang' (emperor), and called himself Che-Hoang-ti. He ruled over an empire nearly coterminous with modern China proper. In his reign the great wall (which see), designed as a protection against marauding Tartars, was begun in 214 B.C. Buddhism was introduce' in 65 A.D. Subsequently the empire broke up into three or more states, and a long period of confusion and weak government ensued. In 960 a strong ruler managed to consolidate the empire, but the attacks of the Tartars were now causing much trouble. In the thirteenth century the Mongols under Jenghis Khan and his son Ogdai conquered China, and in 1259 the celebrated Kublai Khan, a nephew of the latter, ascended the throne and founded the Mongol dynasty. His ninth descendant was driven from the throne, and a native dynasty called Ming again succeeded in 1368 in the person of Hungwu. A long period of peace ensued, but was broken about 1618, when the Manchus gained the ascendency, and after a war of twenty-seven years founded the recent Tartar dynasty in the person of Tungchi, establishing their capital in the northern city of Peking, which was nearer their native country and resources than the old capital Nanking. The earliest authentic accounts of China published in Europe are those of Marco Polo, who visited the country in the thirteenth century. The first British intercourse was attempted under Queen Elizabeth in 1596, and a trade was subsequently established by the East India Company, but no direct intercourse between the governments took place till the embassy of Lord Macartney in 1792. A source of trouble arose when British merchants began to send opium from India to China and established a large trade in this deleterious drug in defiance of the protests of the Chinese authorities. The trouble reached a climax in 1839, when $20,000,000 worth of opium was seized and destroyed. This led in 1840 to the 'Opium war,' in which the Chinese were everywhere defeated. In the treaty of 1842 the defeated nation consented to the opening of the five ports of Canton, Amoy, Foochow, Ningpo and Shanghai to British merchants, the cession of the island of Hong-Kong to the British in perpetuity, and the payment of $21,000,000 indemnity by the Chinese. In 1850 an insurrection, headed by Hung-seu-tseuan or Tien-te, broke out in the provinces adjoining Canton, with the object of expelling the Manchu dynasty from the throne, as well as of restoring the ancient national religion of Shan-ti, and of making Tien-te the founder of a new dynasty, which he called that of Taiping, or Universal Peace. After a long

period of civil war the Tai-ping rebellion was at length suppressed in 1865, chiefly by the exertions of General Gordon and other British and American officers at the head of the Chinese army. In October, 1856, the crew of a vessel belonging to Hong-Kong were seized by the Chinese. The men were afterwards brought back, but all reparation or apology was refused by the British. The day of arbitration between strong and weak nations had not yet come. A war with China commenced, in which the French took part with the British. The war ended in 1858 with the concession of new advantages by China, but it broke out again a year later and in 1860 the British and French forces occupied Peking, this being followed by the ruthless destruction of the summer palace of the emperor. There was a second revolt that began in 1864, continuing until 1868. War was declared between China and Japan on July 31, 1894. Japan, by a series of brilliant victories, both on land and sea, brought the war to an end in April, 1895. Corea was declared independent, Formosa ceded to Japan, and China was forced to pay a very large war indemnity. Trouble of a different kind came in 1900, when an organization of Chinese called the Boxers, infected by the general hatred of foreigners by the people, and apparently secretly instigated by the government, attacked the embassies in Peking. The unwarranted occupation of Chinese territory by Germany, Great Britain, France and Russia, may have been an inspiring cause of this antiforeign sentiment. As the Chinese authorities took no steps to suppress the outbreak, an army of rescue, composed of troops of the various powers, marched upon and took Peking, rescuing the ministers and holding that city until China had agreed to pay a large indemnity and to punish the principal offenders. The indemnity amounted to the enormous sum of $337,000,000, an exaggerated amount of which the United States remitted its share some years later, much to the gratitude of China. Russia had occupied the Chinese province of Manchuria during the outbreak, and her disinclination to restore it led to the great war of 1904-05 with Japan, ending in Russian defeat. During this recent period the spirit of reform and progress above spoken of was active in China, the telegraph became a common need, many railroads were built or projected, and the ancient empire showed a pronounced purpose to adopt the institutions of the western world. In 1908 the emperor Kwang-Seu, who had succeeded as a child in 1875, died, and with him the dowager empress Tsze Hsi An, who for many years had been the actual ruler in China. A new emperor Pu Yi, a young child, succeeded, under the regency of Prince Chun, his father.

Under the heading *Government* the important legislative events of 1910 have been given. In 1911 a series of historical events took place of so momentous a character as to call for more extended description. The discontent with Manchu domination, which had given rise to the Tai-ping rebellion, now made itself manifest in an insurrection that promised to effect a radical change in the governmental conditions of the Chinese Empire. An important step was taken in this direction in the spring of 1911, when the newly-constituted legislative body, called as a 'consultative council' in 1910, but which assumed the position of a parliament from the start, forced the Grand Council of the empire to acknowledge itself a ministry responsible to the National Assembly. The government had agreed to change the date of the promised parliament from 1916 to 1913, and the assembly undertook to work out a national budget, embracing a regulation for popular parliamentary elections. Those steps towards the inauguration of a constitutional monarchy doubtless aided to develop the insurrectionary sentiment latent in the populace, and in August, 1911, an outbreak of a threatening character took place in the southern province of Szechuen, its ostensible cause being a popular protest against the government programme of nationalizing the railways and building them with the aid of foreign loans. The insurrection soon gained head and spread with remarkable rapidity through Southern China, quickly becoming a declared purpose of overthrowing the Manchu dynasty and restoring the old Chinese ascendency. The leaders were very radical in their views and almost from the start the project of replacing the monarchy by a republic was openly broached. City after city was taken by the rebels, until nearly the whole of China south of the Yang-tse-Kiang was in their hands. The government, dismayed by the growing revolt, hastily offered concessions of amazing character, but the rebellion went on, new cities were occupied, many of the imperial troops joined its ranks, and the fleet was surrendered. Severe fighting took place at Hankow, which was retaken from the rebels by the imperialists, many of its inhabitants massacred and great

part of the city burnt. At the end of November the contest centered around the city of Nanking, in which a similar massacre and conflagration by the imperialists had taken place. Yuan Shi-kai, a man of striking ability and the creator of the modern Chinese army, accepted the post of prime minister, and vigorous steps were taken to recover the lost ground. The insurrection also was engineered by men of great ability, among them Wu Ting Fang, former Chinese minister to the United States. Nanking, the last stronghold held by the imperialists in Southern China, was taken by the revolutionists after a severe struggle. The province of Shan-tung, of which Canton is the capital, declared itself an independent republic, electing as president its former viceroy, and Yuan Shi-Kai, apparently hopeless of saving the Manchu dynasty, agreed to an armistice and the holding of a convention at Nanking for the purpose of seeking a satisfactory solution of the governmental problem. On February 12, 1912, the Manchu dynasty abdicated. The revolutionary delegates at Nanking elected as provincial president of China, Dr. Sun Yat Sen, a reformer who had been active in organizing the revolt. Yuan Shi-Kai, premier of the empire, was subsequently made president of the republic. In April, 1913, China definitely assumed her place among the nations. The representatives met at Peking and constituted the House of Parliament—the House of Representatives with 596 members and the Senate with 274 members. In December, 1915, the President announced himself as emperor. This led to a rebellion and a speedy restoration of the republic. He died in June, 1916, and was succeeded by Li Yuan Hung. A second attempt to restore the empire was made by an ambitious general in 1917, but this also quickly failed. Later in 1917 China joined the nations in war with Germany, but took no active part. The Chinese representatives refused to sign the peace treaty with Germany, in 1919, because it included clauses assigning German rights in Shantung to Japan.

China Grass, *Boehmeria nivea*, a plant of the nettle family, a native of Southern and Eastern Asia and the Asiatic islands, and now more or less cultivated in many other countries. It yields a fiber which possesses most valuable properties, and has long been made in China into a beautiful cloth. It is very strong, presents unusual resistance to the effects of moisture, and is fine and silky in appearance. As to its full capabilities these are hardly as yet known, though many trials have been made with it as a subject of manufacture. Recently considerable quantities have been used in France, and woven both pure and mixed into various beautiful fabrics. In England such articles as ladies' scarfs, handkerchiefs, umbrella-covers, etc., are made of it. Hitherto, however, its high price, owing to the difficulty of preparing it in a suitable form for manufacture, has been against its use, but a sufficiently cheap process of preparation is said to have been recently invented. Called also *Rhea*, *Rheea*, *Ramie*, or *Ramee*.

China, Great Wall of, the largest artificial structure on the face of the earth, a barrier extending for about 1500 miles in the north of China proper, of which it partly forms the northern boundary. Its western end is in the deserts of Central Asia, its eastern reaches the sea to the northeastward of Peking. It was erected as a barrier against the inroads of the barbarous tribes, and dates from about 214 B.C. It is carried over height and hollow, and avoids no inequality of the ground, reaching in one place the height of over 5000 feet above the sea. Earth, gravel, brick and stone were used in its construction, and in some places it is much more substantial than in others. Its greatest height, including a parapet on top, is about 50 feet, and it is strengthened by towers at regular distances.

China Ink, a black substance, which, when rubbed down with water, forms a very pure black indelible ink. It has been used in China from time immemorial. There are different accounts of the process, but it appears to be made by boiling the juices of certain plants with water to a syrup, adding to this a quantity of gelatine, and then thoroughly incorporating the carbonaceous matter. There is generally added some perfume—a little musk or camphor. The mass is then made into square columns of different sizes, which are often decorated with figures and Chinese characters. Many attempts have been made to imitate Chinese ink, some of which have been tolerably successful. Good Chinese ink should have a velvety-black appearance, with a gloss which becomes very conspicuous on rubbing. The color it gives on paper should be pure black and homogeneous, and if water be passed over it it should not run or become streaky. It is indelible by ordinary solvents, but may be removed sometimes mechanically.

Chinandega (chē-nän-dā'gä), a town of Central America, Nicaragua, 20 miles northwest of

Leon, connected by railway with the port of Corinto, and carrying on a considerable trade. Pop. about 12,000.

China Root, the root or rhizome of *Smilax China*, a climbing shrubby plant closely allied to sarsaparilla, for which it is sometimes used.

China Rose, the name given to a number of varieties of garden rose chiefly derived from *Rosa indica* and *R. semperflorens*, both natives of China. Also a name sometimes given to *Hibiscus rosa sinensis*, one of the mallow tribe, common in China and the East Indies, and an ornament in hothouses.

China Sea, that part of the North Pacific Ocean bounded N. by Formosa, N. W. by China, W. by Anam and the Malay Peninsula, S. E. by Borneo, and E. by the Philippines. It contains numerous islands, receives several considerable rivers, and forms the important Gulfs of Siam and Tonquin.

Chi'na-ware, porcelain, the finest and most beautiful of all the kinds of earthernware, so called from China being the country which first supplied it to Europeans. When broken it presents a granular surface, with a texture compact, dense, firm, hard, vitreous and durable. It is semitransparent, with a covering of white glass, clear, smooth, unaffected by all acids excepting the hydrofluoric, and resisting uninjured sudden changes of temperature. For the process of manufacture see *Pottery*.

China Wax, a sort of wax deposited by insects on a deciduous tree with light-green, ovate, serrated leaves, cultivated in the province of Si-chuen (Ssu-chuan) in Southwestern China. The insects, a species of coccus, are bred in galls which are formed on a different tree, an evergreen (a species of Ligustrum or privet), and these galls are transported in great quantities to the districts where the wax trees are grown, to the branches of which they are suspended. Having emerged from the galls the insects spread themselves over the branches, which gradually become coated with a white, waxy substance, reaching in 90 or 100 days the thickness of a quarter of an inch. The branches are then lopped off and the wax removed. It is white in color and is chiefly made into candles; it melts at 160°, whereas tallow melts at about 95°.

Chinch, the popular name of certain fetid American insects, genus *Rhyparochrŏmus*, resembling the bedbug, very destructive to wheat, maize, etc., in the Southern and Western States. Also applied to the common bedbug, (*Cimex lectularius*).

Chincha Islands (chin'chȧ), a group of small islands off the coast of Peru, lat. 13° 38′ S.; lon. 76° 28′ W. They are granitic, arid, and destitute of vegetation; and the coasts bold and difficult of access. Immense deposits of guano used to exist here, but are now exhausted. Guano from these islands began to be imported into Europe on an experimental scale about 1832, and the trade rapidly grew into importance. The Peruvian government retained the monopoly of the export, and made it one of the chief sources of its revenues.

Chinchilla (chin-chil'a), a genus of S. American herbivorous rodents very closely allied to the rabbit, which they resemble in the general shape of the body, in the limbs being longer behind than before, in the conformation of the rootless molars, and by the nature of the fur, which is more woolly than silky; but differing from the rabbit in the number of their incisors and molars, in a greater length of tail, and also in having broader and more rounded ears. *C. lanigĕra*, a species about 15 inches long, is covered with a beautiful pearly-gray fur, which is highly esteemed as stuff for muffs, pelisses, linings, etc. The chinchilla lives gregariously in the mountains of most parts of South America, and makes numerous and very deep burrows. It is of a gentle nature and very sportive. The short-tailed chinchilla, *Chinchilla brevicaudata*, of Peru, is decidedly larger than the common chinchilla, with relatively shorter ears and tail. The general color of the fur of the upper parts is a bluish gray, mottled with slaty black; the under surface of the body, as well as the feet, being white. The tail gradually becomes bushy towards the tip; its fur is a mixture of grayish black, becoming darker towards the tip on the upper surface. Cuvier's chinchilla, *Lagidium cuvieri*, is larger than either of the preceding. The length of the head and body is from sixteen to twenty inches; and the tail, exclusive of the hair at the tip, is eleven to twelve inches. The ancient Peruvians made fine fabrics of chinchilla wool for coverlets and articles of clothing.

Chinese Exclusion. The rapid increase of Chinese immigration into the United States and the bitter opposition aroused by it among the laboring classes in California, led to a treaty with China in 1880, partly restricting this immigration. As the number of Chinese in this coun-

try rapidly increased in the following years, a law absolutely prohibiting immigration was passed by Congress in 1888. A similar policy of exclusion exists in some other countries, such as Australia and South Africa. This policy of exclusion has recently been applied by treaty to Japanese laborers.

Chingleput (ching'gl-put), or CHENGALPAT, a coast district, and its capital, Hindustan, presidency of Madras. The district, which lies S. of Arcot and Madras—area, about 2842 square miles—has generally a bad soil, broken up frequently by granite rocks. Pop. 1,312,122. This tract of country was in 1750 and 1763 obtained by the East India Company from the Nabob of Arcot. The town is 15 miles W. from the Bay of Bengal, and has a pop. of 10,551.

Chiniot (chin'i-ot), a town of Hindustan, in the Punjab, near the Chenab. Pop. about 15,000.

Chinkapin (chink'a-pin), the American dwarf chestnut. See *Chestnut.*

Chin-kiang (chin-kē-äng'), or TCHANG-KIANG, a city, China, province of Kiangsu, right bank of the Yang-tse-kiang, near the junction of the Imperial Canal; one of the British treaty ports, advantageously situated for trade. In 1842 it was taken by the British, after a determined resistance on the part of the Manchu garrison. It suffered severely in the Tai-ping rebellion. Pop. est. about 168,000.

Chinoline (kin'o-lin; C_9H_7N), an oily liquid obtained by distilling quinine with potash and a little water, or by the dry distillation of coal. It is used in medicine as an antiseptic and as a remedy in intermittent fevers, etc.

Chinon (chē-nōn), a town in France, dep. Indre-et-Loire, on the Vienne, 28 miles S. W. of Tours. Rabelais was born in its vicinity. Pop. (1906) 4071.

Chinook Winds (chin'ŏk), warm westerly winds experienced in some parts of the western United States.

Chinsura (chin-su'ra), a former town of Bengal, on the Hugli, now part of the city of Hugli. It was the chief Dutch settlement in Bengal and was ceded to the British in 1824.

Chintz, cotton cloth or calico printed with flowers or other devices in various colors and generally glazed.

Chiococca (kī-ō-kok'ka), a genus of tropical plants, nat. order *Rubiaceæ,* consisting of small, often climbing shrubs, with funnel-shaped, yellowish flowers; fruit a white berry with two seeds. The bark of the root of *C. angnifūga* is a violent emetic and purgative.

Chioggia (kē-od'jȧ), a seaport town in Italy, on one of the lagoon islands of the Adriatic, 15 miles from Venice. It is built partly on piles, and has some handsome edifices. Its harbor is fortified, and it has ship yards, fisheries and a coasting trade. Pop. 26,250.

Chipmunk, CHIP'MUCK, the popular name in America of the ground squirrel, genus *Tamias.*

Chippendale (chip'en-dāl), a style of furniture made by Thomas Chippendale and his son in the eighteenth century, and since frequently copied. It is distinguished by elaboration of ornament and harmony of proportion, and though solidly built gives a general effect of lightness. The chairs are of great variety and many of them are very beautiful. Chippendale introduced the cabriole leg from Holland, the claw and ball foot of the Orient, the straight, square Georgian leg, the lattice-work Chinese leg, the fret-work Gothic leg, etc. The chair-backs are equally varied.

Chippenham (chip'nam), a municipal and parliamentary borough of England, Wiltshire, 12 m. N. E. of Bath, on the Avon. Pop. 5332.

Chippewa Falls (chip'e-wä), a city, county seat of Chippewa Co., Wisconsin, 135 miles S. E. of Duluth, Minnesota, on the Chippewa River. It has large lumber interests, shoe factories, flour mills, etc. Seat of State Home for Feeble Minded. Pop. 9130.

Chippewayans (chip'pe-wā-ans), a race of Indians of Athabasca stock, in N. W. Canada.

Chippeways (chip'e-wāz), or OJIBWAYS, a tribe of North American Indians, United States and Canada. They are distributed in bands round both sides of the basin of Lake Superior, where they once owned vast tracts. They are of the Algonquin stock, tall, and active, subsist chiefly by hunting and fishing, and number about 18,000.

Chipping Sparrow (*Spizella socialis*), a common N. American bird, some five or six inches long.

Chipping-Wycombe. See *Wycombe.*

Chiquimula (chi-ki-mō'lȧ), a department of the Central American State of Guatemala; area 4000 sq. miles. Pop. 65,000. Its capital, of the same name, has about 4000.

Chiquitos (chi-kē'tōs), an Indian people of Bolivia, about the headwaters of the Madeira and Paraguay. They number about 22,000, distributed among ten missions established by the Jesuits.

Chiragra (ki-rag'ra), that species of gout which attacks and stiffens the joints of the hand.

Chiretta (ki-ret'ta), or CHIRA'TA, an Indian bitter derived from the stems of *Agathōtes Chirāta* (or *Ophelia Chirāta*), a gentianaceous plant from the north of India. It is similar in its medicinal properties to gentian.

Chiriqui (chē-re-kē'), a district in Panamá, Central America. It is naturally very fertile, and has good harbors both on the Caribbean and Pacific coasts. The name is also given to a lagoon and an archipelago on the coast of this state. Pop. about 40,000.

Chiromancy (kī'ro-man-si). See *Cheiromancy.*

Chiron (kī'ron), the most famous of the Centaurs, a race fabled as half-men, half-horses. He lived at the foot of Mt. Pelion in Thessaly, and was celebrated through all Greece for his wisdom and acquirements, particularly for his skill in medicine and music, and the greatest men of the time—Æsculapius, Jason, Hercules, Achilles, etc.—were represented as his pupils.

Chironectes. See *Cheironectes.*

Chiropody (kī-rop'ō-di), the art of treating diseases, callosities or excrescences of the hands and feet.

Chiropractic (ki'rō-prak-tik), a method of adjusting the cause of disease, defined by its practitioners as the study and application of a universal philosophy of biology, theology, theosophy, health, disease and death. Mechanically it consists in adjusting *by hand* (hence the name) the subluxations of the human skeletal frame, more especially those of the spinal column, for the purpose of permitting the re-creation of all normal cyclic currents through nerves that have been impigned. The first chiropractic adjustment of vertebræ was made in September, 1895, by Dr. D. D. Palmer but the method was not developed until 1903, when his son, B. J. Palmer, D. C., worked out a well defined system of philosophy and practice. Chiropractic is based upon the hypothesis that man is a spiritual being as well as mechanical and chemical, and claims that it is the Innate Intellectuality residing within the body of the patient that does the healing; the mechanical adjustments simply open the channels. There are a number of chiropractic schools in the United States, including the Palmer School at Davenport, Iowa.

Chiru (chē'rō), *Antilŏpe Hodgsoni*, a fine large species of antelope found in Tibet, somewhat larger than the chamois.

Chisholm (chiz'um), a village in St. Louis Co., Minnesota, 75 miles N. W. of Duluth. In a lumber and mining region. Pop. (1920) 9039.

Chislehurst (chiz'el-hurst), a parish and village of England, in Kent, where (at Camden Place) Napoleon III lived after the Franco-German war. Pop. 8668.

Chisleu (kis'lu), or KISLEW, the ninth month of the Jewish year, corresponding to December. On the 25th of Chisleu commences the Hanukkah festival, which lasts eight days.

Chiswick (chis'ik), a town and parish, England, county of Middlesex, 5 miles W. of Hyde Park Corner, London. Pop. (1911) 38,705.

Chitaldrug (chit-al-drŏg'), a district and town of India, Mysore, native state. The district, which is arid and stony, has an area of 4022 sq. miles; pop. 408,795.—The town has fortifications constructed by Haider Ali. Pop. 5792.

Chitin (kī'tin), the chief tissue-forming ingredient of the wing-cases of insects and the shells of crabs and other crustaceans. From these sources it can be obtained by successive treatment with different solvents to remove inorganic matter, fat, etc. It is solid, transparent and horny.

Chitons (kī'tonz), CHITONIDÆ, a family of gasteropods, affording the only instance known of a molluscan shell formed of many successive portions, often in contact and overlapping each other, but never truly articulated. The shell in the typical genus *Chiton* is composed of eight pieces, the animal adhering to rocks or stones after the fashion of the limpet.

Chittagong (chit'a-gong), a district of Hindustan, in the S. E. of Bengal, having the Bay of Bengal on the W.; area, 2567 sq. miles; pop. 1,353,250. The level lands, chiefly on the coast, and the valleys, are very fertile. A considerable majority of the inhabitants are Mohammedans. Chittagong is also the name of a commissionership or division of Bengal. Area, 12,118 square miles; pop. 4,737,731.—

The city of Chittagong, chief town of the district and second port in Bengal, is situated on the Karnaphuli about 12 miles from its mouth. Though very unhealthy, its trade has of late been steadily increasing. Pop. 24,100.

Chittagong Wood, the wood of several Indian trees, especially of *Chickrassia tabularis*, order Cedrelaceæ, a light-colored, beautifully-grained wood used by cabinet-makers. Also *Cedrela Toona*. See *Toon*.

Chitteldroog. See *Chitaldrúg*.

Chittoor (chit'tör), or CHITTORE, a town of India, capital of the North Arcot District, Madras Presidency. Pop. 11,500.—Also a town of India, in the state of Cochin. Pop. about 10,000.

Chiusa (kē-ö'sä), two Italian towns, one in N. Italy, province Cuneo, pop. 5728; the other in Sicily, province Palermo, pop. 6605.

Chiusi (kē-ö'sē), the *Clusium* of the Romans; a town of Italy, province Sienna, and 43 miles S. from Arezzo. It was the capital of Lars Porsena, and has collections of Etruscan and Roman antiquities. Pop. 6011.

Chivalry (chiv'al-ri; French *chevalerie*, from *cheval*, a horse), a term which indicates strictly the organization of knighthood as it existed in the middle ages, and in a general sense the spirit and aims which distinguished the knights of those times. The chief characteristics of the chivalric ages were a warlike spirit, a lofty devotion to the female sex (the latter somewhat questionable), a love of adventure, and an undefinable thirst for glory. The Crusades gave for a time a religious turn to the spirit of chivalry, and various religious orders of knighthood arose, such as the Knights of St. John, the Templars, the Teutonic Knights, etc. The education of a knight in the days of chivalry was as follows: In his twelfth year he was sent to the court of some baron or noble knight, where he spent his time chiefly in attending on the ladies, and acquiring skill in the use of arms, in riding, etc. When advancing age and experience in the use of arms had qualified the page for war, he became an *esquire*, or *squire*. This word is from L. *scutum*, a shield, it being among other offices the squire's business to carry the shield of the knight whom he served. The third and highest rank of chivalry was that of knighthood, which was not conferred before the twenty-first year, except in the case of distinguished birth or great achievements. The individual prepared himself by confessing, fasting, etc.; religious rites were performed; and then, after promising to be faithful, to protect ladies and orphans, never to lie nor utter slander, etc., he received the *accolade*, a slight blow on the neck with the flat of the sword from the person who dubbed him a knight. This was often done on the eve of battle, to stimulate the new knight to deeds of valor; or after the combat, to reward signal bravery. Though chivalry had its defects, chief among which, perhaps, we may note a tendency to certain affectations of sentiment and profession, yet it is to be regarded as tempering in a very beneficial manner the natural rudeness of feudal society. As a system of education for the nobles it filled a place in civilization which as yet the arts and letters could hardly occupy.

Chivasso (kē-vàs'sō), a town of Italy, 14 miles N. E. of Turin. Pop. 4299.

Chive, or CIVE (chīv, sīv), a small perennial garden plant (*Allium Schœnoprásum*) of the same genus as the leek and onion, and used for flavoring soups, etc. It is a rare native of Britain, where it is often cultivated as an edging for garden plots.

Chladni (klåd'nē), ERNEST FLORENT FRIEDRICH, a German physicist, born in 1756; died in 1827. He investigated the laws of sound and made important experiments on the vibration of metallic and glass plates of various forms. His works include *Discoveries Concerning the Theory of Sound*, 1787; *Acoustics*, 1802; *Contributions to Practical Acoustics, with Remarks on the Making of Instruments*, 1822; etc.

Chladni's Figures, the figures formed by sand strewn on a horizontal glass or metal plate, or a slip of wood, when it is clamped firmly at one point, and set in vibration by means of a violin-bow.

Chlamydosaurus (kla-mi-du-sa'rus). See *Frilled Lizard*.

Chlamyphorus (kla-mif'o-rus), a genus of quadrupeds of the order Edentäta. The only species, *C. truncātus*, or pichiciago, resembles the mole in its habits; it is about 5 inches long, and its back is covered over with a coat of mail, consisting of twenty-four rows of tough, leathery plates. Its internal skeleton in several respects resembles that of birds. It is a native of South America, allied to the armadillo.

Chlamys (klam'is), a light and freely-flowing scarf or plaid worn by the ancient Greeks as an outer garment. It was oblong in shape, generally twice as long as its width.

Chloral (klō'ral; CCl_3CHO), a liquid first prepared by Liebig by passing dry chlorine gas through absolute alcohol to saturation, afterwards by Städeler by the action of hydrochloric acid and manganese on starch. The *hydrate of chloral*, as now prepared ($CCl_3CHO.H_2O$), is a white, crystalline substance which, in contact with alkalies, separates into chloroform and formic acid. Chloral kills by paralyzing the action of the heart. It is a hypnotic as well as an anæsthetic, and is frequently substituted for morphia. It has been successfully used in delirium tremens, St. Vitus' dance, poisoning by strychnia, in tetanus, and in some cases of asthma and whooping-cough. It should be taken with great caution and under medical advice, as an extra dose may produce serious symptoms and even death. The treatment of poisoning by chloral is to keep the person warm by means of blankets, warm bottles, etc. Warm stimulating drinks should also be administered, such as hot coffee, hot tea, negus, etc. It has been shown that an animal kept warm by wrapping in cotton wool recovered from a dose of chloral that otherwise would have killed it.

Chloranthaceæ (klō-ran-thā'se-ē), a nat. order of apetalous exogens, allied to the peppers, and, like them, having an aromatic, fragrant odor; natives of the warm regions of India and America. *Chloranthus officinālis* is reckoned a stimulant and tonic of the highest order.

Chlorate (klō'rāt), a salt of chloric acid. The chlorates are very analogous to the nitrates. They are decomposed by a red heat, nearly all of them being converted into metallic chlorides, with evolution of pure oxygen. They deflagrate with inflammable substances with such facility that an explosion is produced by slight causes. The chlorates of sodium and potassium are used in medicine. The latter, in doses of from one to twenty grains, is largely used in scarlet fever, inflamed throat, etc. It is also used in the manufacture of lucifer-matches, fireworks and percussion-caps.

Chloric Ether (klō-rik ē'ther), a volatile liquid (C_2H_5Cl) obtained by passing hydrochloric acid gas into alcohol to saturation and distilling the products. Called also *Hydrochloric Ether*.

Chloride of Lime. See *Bleaching Powder*.

Chlorimetry (klō-rim'i-tri), the process of testing the bleaching power of any combination of chlorine, but especially of the commercial articles the chlorides of lime, potash and soda.

Chlorine (klō'rin; sym. Cl; atom. weight 35.5), an elementary greenish-yellow, irrespirable gas, with a peculiar, penetrating, suffocating odor and acid, astringent taste, discovered by Scheele in 1774, who named it *dephlogisticated marine acid*. It was afterwards proved by Davy to be a simple body, and from its peculiar yellowish-green color the appellation of *chlorine* (from Greek *chlōros*, yellowish green) was given to it. It is always found in nature in a state of combination. United with sodium it occurs very largely as the chloride of sodium or common salt, from which it is liberated by the action of sulphuric acid and manganese dioxide. Chlorine is a very heavy gas, being about two and a half times as heavy as ordinary air; it has a peculiar smell, and irritates the nostrils most violently when inhaled, as also the windpipe and lungs. It exercises a corrosive action upon organic tissues. It is not combustible, though it supports the combustion of many bodies, and, indeed, spontaneously burns several. In combination with other elements it forms chlorides, which act most important parts in many manufacturing processes. This gas may be liquefied by cold and pressure, and it solidifies and crystallizes at —102° C. into a yellow mass. Chlorine is one of the most powerful bleaching agents, this property belonging to it through its strong affinity for hydrogen. Hence in the manufacture of bleaching powder (chloride of lime) it is used in immense quantities. When applied to moistened colored fabrics it acts by decomposing the moisture present, the oxygen of which then destroys the coloring matter of the cloth, etc. It is a valuable disinfectant where it can be conveniently applied, as in the form of chloride of lime.

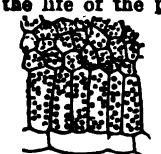
Chlorite (klō'rīt), a mineral of a grass-green color, opaque, usually friable or easily pulverized, composed of little spangles, scales, prisms, or shining small grains, and consisting of silica, alumina, magnesia and protoxide of iron. It is closely allied in character to mica and talc. There are four subspecies—chlorite earth, common chlorite, chlorite slate and foliated chlorite.

Chlorodyne (klō'rō-dīn), a popular patent medicine used in allaying pain and inducing sleep, and containing morphia, chloroform, prussic acid, extract of Indian hemp, etc. There are several makes of it, but all have to be used with caution.

Chloroform (klō'rō-form; $CHCl_3$), the perchloride of formyle, a volatile colorless liquid of an agreeable, fragrant, sweetish apple taste and smell, of the specific gravity of 1.48, and discovered by Soubeiran and Liebig in 1832. It is prepared by cautiously distilling together a mixture of alcohol, water and chloride of lime or bleaching powder. Its use as an anesthetic was introduced in 1847 by Professor (afterwards Sir) James Y. Simpson of Edinburgh. For this purpose its vapor is inhaled. The inhalation of chloroform first produces slight intoxication; then, frequently, slight muscular contractions, unruliness and dreaming; then loss of voluntary motion and consciousness, the patient appearing as if sound asleep; and at last, if too much be given, death by coma and syncope. When skilfully administered in proper cases it is considered one of the safest of anesthetics; but it requires to be used under certain precautions, as its application has frequently proved fatal. Chloroform is a powerful solvent, dissolving resins, wax, iodine, etc., as well as strychnine and other alkaloids.

Chlorophane (klō'rō-fān), a mineral, a variety of fluorspar which exhibits a bright-green, phosphorescent light when heated.

Chlorophyll (klō'rō-fil), the green coloring matter of plants. It plays an important part in the life of the plant, as it breaks up the carbonic acid gas taken in by the stomata of the leaves into its two elements, carbon and oxygen, returning the oxygen to the air, and converting the carbon with the water obtained from the roots into starch. Light is indispensable to the formation of chlorophyll, and hence arises the etiolation or blanching of plants by privation of light, either by the art of the gardener or from accidental causes.



Chlorophyll Granules in Cells of a Leaf.

Chlorosis (klō-rō'sis; Greek *chlōros*, yellowish green), or GREEN SICKNESS, a disease specially affecting young girls, is characterized by a greenish or yellowish hue of the skin, languor, indigestion and general debility, and derangement of the system. The pathological condition of chlorosis is a diminution in quantity of the red globules of the blood, an important constituent of which is iron, and accordingly the administration of iron forms a leading part of the treatment of this disease.—The term is also applied to a disease of plants in which a deficiency of chlorophyll causes a blanched and yellow appearance instead of a healthy green in the plant.

Choate (chōt), JOSEPH HODGES, lawyer, born at Salem, Massachusetts, in 1832. Was graduated at Harvard in 1852, and at Harvard Law School in 1854. A member of the bar in Massachusetts, he removed to New York City in 1856 and was admitted to the bar of that city. A gifted orator and noted jurist, he was appointed ambassador to Great Britain by President McKinley, 1899-1905. He died May 14, 1917.

Choate, RUFUS, lawyer, born in Ipswich, Massachusetts, in 1799; died in 1859. In 1830 he was elected to Congress; also in 1832. In 1841 he succeeded Daniel Webster in the U. S. Senate, serving until 1845. In many respects he was the most scholarly of American public men, and among the greatest forensic advocates America has produced.

Chocolate (chok'ō-lāt; from Mexican *chocolatl*), a paste composed of the kernels of the *Theobroma Cacao* or cacao-tree, ground and combined with sugar and vanilla, cinnamon, or other flavoring substance; also a beverage made by dissolving chocolate in boiling water or milk. It was used in Mexico long before the arrival of the Spaniards, and is now extensively used in Europe and America as a beverage and confection.

Choctaws (chok'taṣ), a North American Indian tribe now settled on a portion of Oklahoma, about 16,000 in all. They formerly inhabited what is now the w. part of Alabama and s. part of Mississippi. They cultivate the soil, are partially civilized, having a regular constitution prefaced with a bill of rights, courts of justice, books and newspapers.

Choczim (*ho*'tsim). See *Khotin*.

Choir (qwīr), that part of a cruciform church extending eastward from the nave to the altar, frequently inclosed by a screen, and set apart for the performance of the ordinary service. The name is also given to the organized body of singers in church services.

Choiseul (shwä-zœul), an ancient French family which has furnished many distinguished individuals. One of the best known is Étienne François, Duke of Choiseul-Amboise, born in 1719; died in 1785. He entered the army in early life, and after distinguishing himself on various occasions in the Aus-

trian War of Succession, returned to Paris, where his intimacy with Madame de Pompadour furnished the means of gratifying his ambition. After having been ambassador at Rome, and at Vienna, where he concluded with Maria Theresa the treaty of alliance against Prussia, he became in reality prime-minister of France, and was very popular through a series of able diplomatic measures. He negotiated the famous Family Compact which reunited the various members of the Bourbon family, and restored Corsica to France. His fall was brought about in 1770 by a court intrigue, supported by Madame du Barry, the new favorite of the king. He was banished to his estates, but his advice in political matters was frequently taken by Louis XVI.

Choisy-le-roi (shwä-sē-l-rwä), a handsome town, France, 7 miles S. of Paris on the Seine. In its cemetery is the tomb of Rouget de l'Isle, author of the *Marseillaise*. Pop. (1906) 12,000.

Choke-cherry, a popular name for one or more species of cherry (such as *Prunus* or *Cerasus boreālis*, *Prunus Virginiāna*), distinguished by their astringency.

Choke-damp, or AFTER-DAMP, the name given to the irrespirable gas (carbonic acid) found in coal-mines after an explosion of fire-damp or light carburetted hydrogen.

Cholagogue (ko'la-gog), a medicine which has the property of stimulating the liver and producing a secretion of bile thereby.

Cholera (kol'ē-ra), ASIATIC, a deadly parasitic endemic and epidemic disease, characterized by acute diarrhœa, vomiting, feeble circulation, coldness, cramps and collapse. The victims of cholera are those whose intestines are weakened by previous illness, bad feeding, exhaustion, or excess in eating or drinking. In an epidemic, cases vary from those rapidly fatal to those of hardly recognizable diarrhœa; but with the typical pronounced case, in the course of a few hours after diarrhœa begins the stools have the typical 'rice-water' appearance, caused by quantities of floating white particles like rice, which are shreds of intestinal mucous membrane. Vomiting begins, at first of the stomach contents, and later of 'rice-water' material. The patient suffers severely from intense cramps of the limbs and unquenchable thirst; and unless reaction soon takes place, he falls into a collapsed condition, unable to help himself in any way, although generally quite clear-headed.

This disease is endemic in certain parts of Asia, and is liable to spread to other parts of the world, usually by the ordinary channels of commercial intercourse. It first appeared in Europe in 1829, and reached Britain in 1831, spreading thence to America.

The primary and essential element in the production of cholera has been ascertained to be a constituent of the excreta of cholera patients. Dr. Koch asserts that the essential cause is a bacillus, having the form of a curved rod, hence called the *comma bacillus*, discovered by himself, and that the disease is caused by the multiplication of this organism in the small intestines, it being due usually to drinking impure water.

A cholera antitoxin was discovered by Professor Vincent, head of the Val de Grace Military Hospital, Paris, who also discovered a typhoid antitoxin, and details were presented before the Academy of Medicine in March, 1915.

What is called *cholera morbus* is a bilious disease, long known in most countries, and is characterized by copious vomiting and purging, with violent griping, cramps of the muscles of the abdomen and lower extremities, and great depression of strength. It is most prevalent at the end of summer or the beginning of autumn. *Cholera infantum* (infants' cholera) is the name sometimes given to a severe and dangerous diarrhœa to which infants are liable in hot climates or in the hot season, and usually due to improper methods of feeding and caring for the food.

Cholesterin (kō-les'ter-in; $C_{26}H_{44}O$), a monatomic alcohol found in bile, blood, etc., which may be obtained in the form of beautiful, pearly crystalline scales, without taste and odor. It is widely distributed in the animal economy, being essential to the brain and nerve substance, and having been found in milk, and many portions of the body, both as a normal and a pathological constituent.

Cholet (sho-lā), a town of N. W. France, dep. Maine-et-Loire, 32 miles S. W. of Angers, with manufactures of cotton goods and woolen stuffs, and a brisk trade. Pop. (1906) 16,554.

Cholochrome (k ō 'lo-krōm), CHOLOPHÆIN (k ō-lo-fē'in), the brown coloring matter contained in bile and in the intestines, and the substance coloring the fæces and the skin in jaundice.

Cholos (chō'lōs), in Peru, the name for those who are partly of white, partly of Indian parentage, the most numerous class of the community.

Cholula (chō-lō'lä), a town of Mexico, 60 miles S. E. by E. of Mexico, formerly a large city, the seat of the religion of the ancient Mexicans, with more than 400 temples. One of these temples still remains, built in the form of a pyramid, each side of its base measuring 1440 feet and its height in all 164 feet. On the top is a chapel of Spanish origin. Pop. about 9000.

Chondrite (kon'drīt). a fossil seaweed.

Chondropterygii (kon-drop-te-rij'-i-i), one of the two great sections into which Cuvier divides the class Pisces or fishes, distinguished from the fishes with true bone by the cartilaginous or gristly substance of which the bones are composed, and by the cartilaginous spines of the fins. The families include the sturgeon, shark, ray and lamprey.

Chondrus (kon'drus), the genus of seaweeds to which carragreen or Irish moss belongs.

Chonos Archipelago (chō'nōs), a group of islands lying off the W. coast of Patagonia, mostly between lats. 44° and 46° S. and lon. 74° and 75° W. Two are large, but they are all barren and scantily inhabited.

Chopin (chop'in), an old liquid measure containing half a pint in England, a quart in Scotland.

Chopin (shō-paṇ), FRÉDÉRIC FRANÇOIS, pianist and musical composer, of French extraction, was born at Warsaw in 1810, went to Paris in 1831 on account of the political troubles of Poland, and died there in 1849. He wrote numerous pieces for the pianoforte, chiefly in the form of nocturnes, polonaises, waltzes and mazurkas, all of which display much musical invention, abounding in subtle ideas with graceful harmonic effects.

Chopine (chop-ēn'), a very high shoe or elevated clog, introduced into England from Venice, in the reign of Queen Elizabeth and which became the fashionable wear of court ladies during that reign. They were made of wool covered with leather of sundry colors, white, red, yellow and sometimes gilt. Some of them were of great height, as much as 18 inches, the height of the chopine being seemingly regarded as a mark of the rank of the wearer.

Chopines.

Chop'sticks, the Chinese substitute for our knife, fork and spoon at meals, consisting of two smooth sticks of bamboo, wood, or ivory, which are used for conveying meat to the mouth with wonderful dexterity.

Choragic Monument (ko-rā'jik). See *Choragus.*

Choragus (ko-rā'gus), a name given by the Greeks to the leader or director of the choruses furnished for the public festivals, and who also defrayed the expenses of the chorus. (See *Chorus*). The choragus who was adjudged to have performed his duty best received a tripod of brass, for which he had to build a monument, on which it was placed. A street in Athens which contained a great number of these choragic monuments was called the Street of the Tripods.

Chorale (ko-rā'le), or CHO'RAL, the psalm or hymn tune of the German Protestant churches, a simple melody to be sung in harmony or in unison by a number of voices to sacred words.

Choral Music (kō'ral), vocal music in parts; music written or arranged for a choir or chorus, and including oratorios, cantatas, masses, anthems, etc.

Choral Service, in the Church of England, service with intoned responses, and the use of music throughout wherever it is authorized. The service is said to be *partly* choral when only canticles, hymns, etc., are sung; *wholly* choral, when, in addition to these the versicles, responses, etc., are sung.

Chord (kōrd; Greek *chordē*, a string of gut), in music, the simultaneous combination of different sounds, consonant or dissonant. The common *chord* consists of a fundamental or bass note with its third and fifth. When the interval between the bass note and its third is two full tones the combination is a *major chord;* when the interval is a tone and a half the combination is termed a *minor chord;* when the intervals between the bass note and its third and the third and the fifth are each a tone and a half, the chord is called *diminished.* The *tonic chord* is made up of the keynote and its third and fifth; the *dominant chord* consists of the dominant or fifth of the scale accompanied by its third and fifth; the *subdominant chord* has for its root or bass the subdominant or fourth of the scale, accompanied with its third and fifth.—In geom. a chord is a straight line drawn, or supposed to ex-

tend, from one end of an arc of a circle to the other.

Chorda Dorsa'lis, the notochord or dorsal chord. See *Notochord.*

Chordæ-Voca'les, or cords. See the vocal chords *Larynx.*

Chorea (ko-rē'a). See *Vitus' Dance, St.*

Choriambus (kō'ri-am-bus), in pros. a foot consisting of four syllables, of which the first and last are long, and the others short; that is, a choreus, or trochee, and an iambus united.

Chorion (kō'ri-on), in anatomy the external vascular membrane, covered with numerous villi or shaggy tufts, which invests the fetus in utero.

Chorley (chōr'li), a municipal borough and market town, England, Lancashire, on the Yarrow, 20 miles N. W. of Manchester, with manufactures of cotton goods, calico-printing and dyewood works, floor-cloth works, iron-foundries, etc. In the vicinity are coal, lead and iron mines. Chorley gives name to a parliamentary division of the county. Pop. (1911) 30,317.

Choroid (kōr'oid), CHO'RIOID, a term applied in anatomy to various textures; as the *choroid membrane,* one of the membranes of the eye, of a very dark color, situated between the sclerotic and the retina, and terminating anteriorly at the great circumference of the iris.

Chorus (kō-rus), originally an ancient Greek term for a troop of singers and dancers, intended to heighten the pomp and solemnity of festivals. During the most flourishing period of ancient tragedy (B.C. 500-400) the Greek chorus was a troop of males and females, who, during the whole representation, were spectators of the action, never quitting the stage. In the intervals of the action the chorus chanted songs, which related to the subject of the performance. Sometimes it even took part in the performance, by observations on the conduct of the personages, by advice, consolation, exhortation, or dissuasion. In the beginning it consisted of a great number of persons, sometimes as many as fifty; but the number was afterwards limited to fifteen. The exhibition of a chorus was in Athens an honorable civil charge, and was called *choragy.* (See *Choragus.*) Sometimes the chorus was divided into two parts, who sung alternately. The divisions of the chorus were not stationary, but moved from one side of the stage to the other; from which circumstance the names of the portions of verse which they recited, *strophe, antistrophe* and *epode,* are derived.—In music, the chorus is that part of a composite vocal performance which is executed by the whole body of the singers in contradistinction to the solo airs, and concerted pieces for selected voices. The singers who join in the chorus are also called the chorus. The term is also applied to the verses of a song in which the company join the singer, or the union of a company with a singer in repeating certain couplets or verses at certain periods in a song.

Chose (shōz; French, a thing), in law, property; a right to possession; or that which may be demanded and recovered by suit or action at law. Thus money due on a bond or recompense for damage done is a *chose in action;* the former proceeding from an *express,* the latter from an *implica* contract. A *chose local* is annexed to a place, as a mill or tl-e like; a *chose transitory* is a thing which is movable.

Chosen (chō'sen), the ancient name of Corea, now restored by Japan as the legal name.

Chosroes I (kos'ro-es), surnamed the 'Just,' the greatest of the Sassanid kings of Persia, reigned A.D. 531-579. At his accession Persia was involved in a war with the Emperor Justinian, which Chosroes terminated successfully, obliging Justinian to purchase peace by the payment of a large sum of money. In 540, however, jealous of the renown of Belisarius, the great general of the empire, Constantine violated the peace, invaded Syria, laid Antioch in ashes, and returned home laden with spoils. The war continued till 562, when the emperor was again obliged to purchase peace by an annual tribute of gold. The peace continued for ten years, when the war was renewed with Justin, the successor of Justinian, Chosroes being once more successful. The following emperor, Tiberius, at length completely defeated the Persians in 578.

Chota Nagpore (chu'ta nä g-pur), CHUTIA NAGPUR, a division of British India, presidency of Bengal, divided into the districts of Ranchi, Palamau, Hazaribagh, Singbhum and Manbhum; and two feudatory states. Total area, 43,020 sq. miles. Pop. 4,903,-991.

Chotin (*h*ō'tin). See *Khotin.*

Chouans (shö-ä n), a name given to the royalist peasantry of Brittany and Lower Maine, who carried on a petty warfare against the republican

government from an early period of the French revolution. The name was finally extended to all the Vendeans. The name was derived from the first chief of the Chouans, Jean Cottereau, who with his three brothers organized these bands in 1792. Cottereau had joined a band of dealers in contraband salt, and acquired the surname *Chouan* from the cry of the screech-owl (Fr. *chat-huant*) which he used as a signal with his companions. He was killed in an engagement with the republican troops in 1794. The Chouans were not suppressed till 1799, and even after that occasional spurts of insurrection occurred down till 1830, when they were fully put down.

Chough (chuf), CORNISH CHOUGH, or REDLEGGED CROW, a bird belonging to the genus *Fregilus*, of the crow family, but nearly allied to the starlings. *F. graculus* is the only European species, and frequents, in England, chiefly the coasts of Cornwall. Its general color is black, contrasting well the vermilion-red of the beak, legs and toes. There are other species, natives of Australia, Java, etc.

Chrétien de Troyes (krā-ti-en), a French trouvère, born at Troyes about 1150; died about the end of the twelfth or beginning of the thirteenth century. His fame rests upon six romances still extant, viz., *Iric et Guide, Perceval le Gallois, Le Chevalier au Lion, Cliget, Chevalier de la Table ronde, Lancelot du lac,* and *Guillaume d'Angleterre.* Other two of his works, *Tristan, ou le Roi Marc et la Reine Yesult,* and *Le Chevalier à l'Epée,* have been apparently lost.

Chrism (krism; Greek *chrisma*, salve), the holy oil prepared by the R. Catholic bishops, and used in baptism, confirmation, ordination of priests, and the extreme unction. The name is derived from the Greek word 'to anoint.'

Chrisom (kris'om), a white garment formerly laid upon a child at baptism in token of innocence.

Christ (krist; from Greek *Christos*, the anointed; *Messiah*, from the Hebrew, has the same signification), a title of our Saviour, now used almost as a name or part of his name. See *Christianity* and *Jesus Christ.*

Christadelphians (k r i s t-a-del'fi-anz), a religious body of recent origin, who believe that God will raise all who love him to an endless life in this world, but that those who do not shall absolutely perish in death; that Christ is the Son of God, inheriting moral perfection from the Deity, our human nature from his mother; and that there is no personal devil.

Christchurch (k r I s t' church), a p a r l i a m e n t a r y borough, England, county of Hampshire, 21 miles southwest of Southampton, pleasantly situated at the confluence of the Avon and Stour, about 1 mile from the sea. There is a fine old priory church, dating from the time of William Rufus, with a magnificent stone altar-screen. Pop. 5104.

Christchurch, a town of New Zealand, captal of the province of Canterbury, and the see of the primate of New Zealand, is situated on the Avon River, 7 miles from Port Lyttelton, with which it has railway communication. It contains a number of handsome buildings, among which are the provincial government offices, the Cathedral, St. Michael's Church, the supreme court, hospital, museum, town library, etc. There are a fine park, a botanic garden, and high-class educational and other institutions. Pop. 49,928, or including extensive suburbs, 67,878.

Christian (krist'yan), the name of ten Danish kings, CHRISTIAN II, King of Denmark, Norway, and Sweden, was born 1480; died 1559. He attained the throne in 1513, and in 1518 usurped the throne of Sweden, from which he was expelled by Gustavus Vasa in 1522. He was deposed by his Danish subjects in 1523, and retired to the Netherlands, whence he returned in 1531 with an army, but was defeated, and kept in confinement till his death.—CHRISTIAN IV, King of Denmark, son of Frederick II, born in 1577, succeeded to the throne as a minor in 1588; died 1648.—CHRISTIAN IX. See *Denmark.*—CHRISTIAN X, born in 1870, succeeded his father, Frederick VIII, in 1912.

Christian Endeavor, United Society of, for the promotion of Christion union a m o n g Protestant denominations, originating in 1881, has now about 75,000 societies and 4,000,000 members, represented in all parts of the world. Its purpose is to make the young people loyal and efficient members of the church.

Christian Era, the great era now a l m o s t universally employed in Christian countries for the computation of time. It is generally supposed to begin with the year of the birth of Christ; but that event seems to have taken place four years before the present established beginning of the era. Time before Christ is marked B.C., after Christ A.D. The era is computed from January

1st, in the fourth year of the 194th olympiad, and 753d year from the building of Rome. It was first used by Dionysius, a Syrian monk, in the sixth century, but did not become general until about the middle of the fifteenth century.

Christiania (kris-ti-â'ni-â), a city and port, the capital of Norway, province Aggershuus or Christiania, at the head of the long narrow inlet called Christiania Fjord, about 60 miles from the open sea or Skagerrack. The houses are mostly of brick and stone, generally plain buildings, devoid of architectural pretension. Important public buildings are the royal palace, the house of representatives or *Storthing*, the governor's palace and the cathedral. An

interesting building is the fine old castle of Aggershuus, with its church and citadel crowning a point jutting out into the fjord. Attached to the university—the only one in Norway, opened in 1813—is a museum, containing a fine collection of antiquities. The manufactures of the city consist of woolen cloth, ironware, tobacco, paper, leather, soap, spirits, glass, etc., and there are extensive breweries. The exports are principally timber and iron. The environs are exceedingly beautiful. Pop. 229,101.

Christianity (k r i s-ti-an'i-ti), the religion instituted by Jesus Christ. Though the great moral principles which it reveals and teaches, and the main doctrines of the gospel, have been preserved without interruption, the genius of the different nations and ages have materially colored its character. The first community of the followers of Jesus was formed at Jerusalem soon after the death of their Master. Another at Antioch in Syria first assumed (about 65) the name of *Christians;* and the travels of the apostles spread Christianity through the provinces of the Roman Empire. Palestine, Syria, Asia Minor, Greece, the islands of the Mediterranean, Italy, and the northern coast of Africa, as early as the first century, contained societies of Christians. At the end of the third century almost half of the inhabitants of the Roman Empire, and of several neighboring countries, professed this belief. While Christianity as a system was thus spreading, many heretical branches had sprung from the main trunk. From the Gnostics, who date from the days of the apostles, to the Nestorians of the fifth century the number of sects was large; some of them exist to the present day. The most important events in the subsequent history of Christianity are the separation of the Eastern and Western churches early in the eighth century; and the Western reformation, which may be said to have commenced with the sectaries of the thirteenth century and ended with the establishment of Protestantism in the sixteenth. The number of Christians now in the world is computed at 570,000,000. Of these about 275,000,000 are Roman Catholics, 120,000,000 belong to the Greek Church, and 175,000,000 are Protestants.

Christians (krist'yans), or CHRISTIAN CONNECTION, the name of a denomination in the United States and Canada, adopted to express their renunciation of all sectarianism. They are to be met with in all parts of the country, the number of their churches being estimated at about 1200. Each church is an independent body; the Scriptures are their only rule of faith, and admission to the church is obtained by a simple profession of belief in Christianity. The sect is also known as the Christian Church.

Christiansand (k r is'tē-an-sand), a seaport in the south of Norway, the see of a bishop, with fishing interests, sawmills, wood-pulp factories, shipbuilding yards, mechanical workshops, etc. Pop. 14,701.

Christian Science, the name given by Mary Baker Eddy to her interpretation of the Christian religion. Christian Science dates from 1866, but Mrs. Eddy relates in her memoirs that she had been, for twenty years before 1866, 'trying to trace all physical effects to a mental cause.' The written statement of Christian

Science dates from 1875, when Mrs. Eddy published the Christian Science textbook, *Science and Health With Key to the Scriptures*. This is in the nature of a commentary on the Bible, and purports to contain a complete statement of 'divine metaphysics,' including directions for practice. We read on page 135: 'The same power which heals sin heals also sickness'; also on page 145, with reference to 'scientific healing': 'Its ethical and physical effects are indissolubly connected.' As a religious teaching, Christian Science is presented as the restoration of original Christianity, with its absolutely spiritual understanding of all true being, and its consequent power over all unspiritual conditions, including disease. As a religious movement, Christian Science is notable for the rapidity of its growth. The First Church of Christ, Scientist, was organized in 1879 at Boston. In 1914 there were over 1400 Christian Science churches or societies. A majority of these are located in the United States, but they are numerous wherever the English language is spoken, and a considerable number are to be found in foreign countries. The Christian Science Church is distinctive because it does not employ rites or ceremonies, and does not rely on the personality of preachers. Each church of this denomination elects two readers from its members for stated terms, who conduct its services. On Sundays they read a 'lesson-sermon' composed of selections from the Bible and from *Science and Health With Key to the Scriptures*, by Mrs. Eddy. These lesson-sermons are uniform throughout the world. The remainder of a Sunday service consists of hymns, a solo, silent prayer, and a responsive reading from the Bible. Wednesday evening meetings include testimonies of Christian Science healing from voluntary speakers.

Christians of St. John, a sect of religionists found in Asiatic Turkey, chiefly in the neighborhood of Bassora. They profess to follow the teaching of John the Baptist, and are wrongly called Christians since they reject Christ, and are practically heathen, whose deities are darkness and light. Also called Zabians.

Christians of St. Thomas, or SYRIAN CHURCH OF INDIA, the name of a sect of Christians on the coast of Malabar, in India, numbering some 500,000. The church is doubtless an offshoot of the Nestorian Church of Persia, transplanted to India about the beginning of the sixth century. The yoke of Rome was thrown off in 1653.

Christianstad (kris'te-an-stâd), a town of Sweden, capital of the län or government of same name, on a peninsula in the Helge Lake, about 10 miles from the Baltic, with manufactures of gloves, linen and woolen fabrics, and some trade through the port of Ahus, at the mouth of the Helge. Pop. 10,318.

Christiansted (-sted), a fortified town, capital of the island of St. Croix, Danish West Indies, with a good harbor and some trade. Pop. about 6000.

Christiansund (-sund), a seaport town on the N. W. coast of Norway, 82 miles S. W. of Trondhjem, on three islands which inclose its beautiful landlocked harbor, with a trade in dried and salted fish. Pop. 11,982.

Christina (kris-tē'na), Queen of Sweden, daughter of Gustavus Adolphus, born in 1626; died in 1689. After the death of Gustavus, at Lützen, in 1632, the states-general appointed guardians to the Queen Christina, then but six years old. Her education was continued according to the plan of Gustavus Adolphus. She learned the ancient languages, history, geography, politics, and renounced the pleasures of her age in order to devote herself entirely to study. In 1644 she took upon herself the government. A great talent for business, and great firmness of purpose, distinguished her first steps. She terminated the war with Denmark begun in 1644, and obtained several provinces by the treaty concluded at Bromsebro in 1645. Her subjects wished that she should choose a husband, but she manifested a constant aversion to marriage. During this time her patronage of learned men, artists, and the like was lavish. In 1650 she caused herself to be crowned with great pomp, and with the title of *king*. From that time a striking change in her conduct was perceptible. She neglected her ancient ministers, and listened to the advice of ambitious favorites. Intrigues and base passions succeeded to her former noble and useful views. The public treasure was squandered with extravagant profusion. In 1654 she abdicated in favor of her cousin Charles Gustavus, reserving to herself a certain income, entire independence, and full power over her suite and household. A few days after she left Sweden and went to Brussels, where she made a public entry and remained for some time. There she made a secret profession of the Catholic religion, which she afterwards publicly confirmed in Innsbruck. From

Innsbruck she went to Rome, which she entered on horseback in the costume of an Amazon, with great pomp. When the Pope Alexander VII confirmed her she adopted the surname of *Alessandra*. For some time she resided at Paris, and incurred great odium by the execution of her Italian equerry Monaldeschi for betrayal of confidence. Subsequently attempts which she made to resume the crown of Sweden failed, and she spent the rest of her life in artistic and other studies at Rome. She left an immense art collection and a large number of valuable MSS. Her writings were collected and published in 1752.

Christison (kris'ti-sun), SIR ROBERT, an eminent physician, born at Edinburgh 1797; died 1882. A specialist in toxicology, he was appointed to the chair of medical jurisprudence in Edinburgh, in 1822, and in 1832 he was promoted to that of materia medica. He was twice president of the Royal College of Physicians, president of the Royal Society of Scotland, and ordinary physician to the Queen in Scotland. He was D.C.L. of Oxford and LL.D. of Edinburgh, and was elected rector of the latter university in 1880.

Christmas (kris'mas), the festival of the Christian Church observed annually on December 25th in memory of the birth of Christ, and celebrated by a particular church service. The time when the festival was first observed is not known with certainty; but it is spoken of in the beginning of the third century by Clement of Alexandria; in the latter part of the fourth century Chrysostom speaks of it as of great antiquity. As to the day on which it was celebrated, there was long considerable diversity, but by the time of Chrysostom the Western Church had fixed on the 25th of December, though no certain knowledge of the day of Christ's birth existed. The Eastern Church, which previously had generally favored the 6th of January, gradually adopted the same date. Many believe that the existence of heathen festivals celebrated on or about this day had great influence on its being selected; and the Brumalia, a Roman festival held at the winter solstice, when the sun is as it were born anew, has often been instanced as having a strong bearing on the question. In the Roman Catholic, Greek, Anglican and Lutheran churches there is a special religious service for Christmas Day; and, contrary to the general rule, a Roman Catholic priest can celebrate three masses on this day. Most other churches hold special service, but almost everywhere throughout Christendom it is kept as a holiday and occasion of social enjoyment. In modern times it is the most widely observed of all festivals, extending throughout Christendom and being a season of good fare, present giving and family reunion.

Christmas Boxes, boxes in which presents were deposited at Christmas; hence a Christmas gift. The custom of bestowing Christmas boxes arose in the early days of the church, when boxes were placed in the churches for the reception of offerings; these boxes were opened on Christmas Day, and their contents distributed by the priests on the morrow (boxing day).

Christmas Cards, ornamental cards containing words of Christmas greeting to friends to whom they are sent. The first of them appeared about 1862, and consisted of pictures of robins, holly, etc.; since then highly artistic designs have been introduced, and their manufacture is considerable in the United States, Germany, France and England. Immense quantities of them pass through the postoffice every Christmas.

Christmas Carol, a carol or song descriptive of the birth of Christ, of incidents connected with it, sung specially at Christmas.

Christmas Rose, the *Helleborus niger* (black hellebore), so called from its flower, which resembles a large white single rose; its foliage is dark and evergreen, and the plant blossoms during the winter months.

Christmas Rose (*Helleborus niger*).

Christmas Tree, a small fir-tree lighted up by means of tiny candles of colored wax or small Chinese lanterns, ornamented with flags, tinsel, ornaments, etc., and hung all over with gifts for children.

Christology (kris-tol'o-ji), that branch of the study of divinity which deals directly with the doctrine of the person of Christ.

Christophe (krēs-tof), HENRI, King of Hayti, was born in the West Indies in 1767, and was employed as a slave in St. Domingo on the outbreak of the blacks against the French in 1793. From the commencement of the troubles he signalized himself by his

energy, boldness and activity in many bloody engagements. Toussaint-L'Ouverture gave him the commission of brigadier-general, and he was largely instrumental in driving the French from the island. After the death of Dessalines Christophe became master of the northern part of the island. In 1811 he had himself proclaimed King of Hayti by the name of Henri I. He also sought to perpetuate his name by the compilation of the Code Henri—a digest founded upon the Code Napoleon. His cruelty provoked a revolt, which being unable to quell he shot himself, 1820.

Christopher (krĭs'to-fer), ST., a martyr of the early church, beheaded in Asia Minor, according to tradition in the year 250. The Eastern Church celebrates his festival on the 9th of May, the Western on the 25th of July.

Christopher, ST. (commonly called *St. Kitts*) a British island in the West Indies, one of the Leeward Islands, 23 miles in length, and in general about 5 in breadth; area 68 sq. miles, devoted to sugar and pasturage. The interior consists of many rugged precipices and barren mountains. The chief town, a seaport with open roadstead, is Basse-Terre. The island has a legislature of its own, with an executive subordinate to the governor of the Leeward Islands, resident in Antigua. It was discovered by Columbus in 1493 and colonized by the English in 1628. Pop. 29,127.

Christopulos (krēs-to-pŏ'los), ATHANASIOS, the best of modern Greek lyric poets, born in 1772 at Kastoria, in Macedonia; died 1847. His reputation as a poet rests on his *Erotika* and *Bacchika*, or Love and Drinking Songs, which have been several times collected and printed under the title of *Lyrika*. He is also the author of an *Æolian-Doric Grammar*, and translated into modern Greek parts of the *Iliad* and of Herodotus.

Christ's Hospital (generally known by the name of *Blue-Coat School*, the title having reference to the costume of the children educated there), a school in London, founded by Edward VI for supporting poor orphans. Its present income is about $350,000 annually; the education is essentially classical, but modern languages, literature, etc., are also taught. There is a mathematical school attached, and scholarships are given either to Oxford or Cambridge. The average number of pupils in London and at the preparatory school at Hertford, which includes girls, is upwards of 1000. The London School occupied the site of the old Greyfriars monastery. Here Camden, Richardson, the novelist, Coleridge, Charles Lamb and Leigh Hunt received their education.

Christ's Thorn, the *Paliūrus aculeātus*, a small thorny shrub, order Rhamnaceæ, with small, shining, ovate leaves and yellowish-green, clustered flowers. It is common in the southeast of Europe and Asia Minor, and some suppose it to have been the plant from which the Jews platted the crown of thorns for our Saviour. See also *Jujube*.

Chromate (krō'māt). See *Chrome Iron Ore, Chrome Yellow*.

Chromatic (krō-mat'ik), in music, a term applied to notes and peculiarities not belonging to the diatonic scale. Thus a *chromatic chord* is a chord which contains a note or notes foreign to diatonic progression; *chromatic harmony*, harmony consisting of chromatic chords. The *chromatic scale* is a scale made up of thirteen successive semitones, that is, the eight diatonic tones and the five intermediate tones.

Chromatic Printing. See *Color Printing*.

Chromat'ics, the science of colors; that part of optics which treats of the properties of the colors of light and of natural bodies.

Chrome Green (krōm), the green oxide or sesquioxide of chromium, forming a green pigment used by enamelers.

Chrome Iron Ore, an ore of chromium, is a mineral of very considerable importance as affording chromate of potash, whence are obtained various other preparations of this metal used in the arts.

Chrome-steel, a steel in which the carbon is partly or wholly replaced by chromium. It is asserted that this will bear a higher degree of heat than ordinary steel, and is less likely to become oxidized, or 'burnt,' in working, and also rolls much more smoothly than ordinary steel.

Chrome Yellow, a chromate of lead, a beautiful pigment, varying in shade from deep orange to very pale canary yellow, much used in the arts.

Chromium (krō'mi-um; chemical symbol, Cr; atomic weight, 52.4), a metal which forms very hard, steel-gray masses; it never occurs native, but may be obtained by reducing the oxide. In its highest degree of oxidation it forms a compound of a ruby-

red color. By itself it has received no practical applications. It takes its name from the various and beautiful colors which its oxide and acid communicate to minerals into whose composition they enter. It is the coloring matter of the emerald and beryl. Chromium is employed to give a fine deep green to the enamel of porcelain, to glass, etc. The oxide of chromium is of a bright grass-green or pale-yellow color. This element was originally discovered in 1797 by Vauquelin, in the native chromate of lead of Siberia.

Chromolithography (krō'mō-lith-og' ra- fi), a method of producing a colored or tinted lithographic picture by using various stones having different portions of the picture drawn upon them with inks of various colors and so arranged as to blend into a complete picture. Sometimes as many as twenty different colors are employed. In printing, the lighter shades are printed off first and the darkest last. In the three-color process the use of the three primary colors suffices for all shades, and it is done on a printing press with photo-electrotypes instead of stones.

Chromosphere (krō'mō-sfēr), the name given to the gaseous envelope which exists round the body of the sun, through which the light of the photosphere, an inner envelope of incandescent matter, passes. During total eclipses it had been observed that a red-colored envelope surrounded the sun, shooting up to great distances from the surface. It seems to have been first recognized by Secchi; and the projecting portions of it are commonly described as 'red-colored protuberances' and 'red flames.' To this red envelope the name *chromosphere* was given by Mr. Lockyer. The light from it is much fainter than that from the photosphere; and till 1868, when M. Jansser and Mr. Lockyer almost simultaneously pointed out a method of viewing it, it was never seen except during eclipses. The chromosphere and its prominences, when examined with the telespectroscope, exhibit a spectrum of bright lines, due to incandescent gases. The most elevated portions consist entirely or almost entirely of hydrogen, the lightest of the gases. Lower down are found the gases or vapors of the heavier metals—of sodium, magnesium, barium, iron and others. The lower the layer of the chromosphere examined the more densely is the spectrum filled with lines of metals, and in the prominences the red hydrogen flames tower high above all.

Chronic (kron'ik; from Greek *chronos*, time), a term applied to diseases which are inveterate or of long continuance, in distinction to *acute* diseases, which speedily terminate.

Chronicle (kron'i-kl), a history digested according to the order of time. In this sense it differs but little from *annals*. The term is mostly used in reference to the old histories of nations written when they were comparatively rude. The histories written in the middle ages, some in verse, some in prose, are known as chronicles. Well-known examples are the works of Froissart, Monstrelet, Fabian, Hardyng, Hall, Hollinshed, Stowe and Baker.

Chron'icles, Books of, two books of the Old Testament which formed only one book in the Hebrew canon, in which it is placed last. Its division into two parts is the work of the *Seventy*. (See *Septuagint*.) The Hebrew name means 'acts of the days,' and is thus much the same as our 'journals.' The title given to it by the Seventy was *Paraleipomena*, meaning 'things omitted.' The name Chronicles was given to it by Jerome. The book is one of the latest compositions of the Old Testament, and is supposed to have been written by the same hand as Ezra and Nehemiah. According to its contents the book forms three great parts:—1, genealogical tables; 2, the history of the reigns of David and Solomon; 3, the history of the kingdom of Judah from the separation under Rehoboam to the Babylonian captivity, with a notice in the last two verses of the permission granted by Cyrus to the exiles to return home and rebuild their temple. The Chronicles present many points of contact with the earlier Scriptures, historical and prophetical, more especially, however, with the books of Samuel and of Kings.

Chronogram (kron'ō-gram), a device by which a date is given in numeral letters by selecting certain letters of an inscription and printing them larger than the others, as in the motto of a medal struck by Gustavus Adolphus in 1632:—ChrIstVs DVX; ergo trIVMph Vs; where the values of C and the other capitals regarded as Roman numerals gives the required figure when added together.

Chronograph (kron'ō-graf), the name given to various devices for measuring and registering very minute portions of time with extreme precision. Benson's chronograph is, in principle, a lever watch with a double second hand, the one superimposed on the other. The outer end of the lower

most hand has a small cup filled with a black viscid fluid, with a minute hole at the bottom, while the corresponding end of the uppermost is bent down so as just to reach the hole. At the starting (say) of a horse race, the observer pulls a string, whereupon the bent end of the upper hand passes through the hole and makes a black mark on the dial, instantly rebounding. Again, as each horse passes the winning-post the string is redrawn and a dot made, and thus the time occupied by each horse is noted. This chronograph registers to one-tenth of a second. Strange's chronograph is connected with the pendulum of an astronomical clock, which makes a mark on a sheet of paper at the beginning and end of each swing. By touching a spring on the appearance (say) of a particular star in the field of a telescope, an additional dot is made intermediate between the two extreme ones, and by measuring the distance of this from either of these extremes the exact time can be ascertained to one-hundredth of a second. Schultze's chronograph, in which electricity is applied, is yet far more precise, registering time to the five-hundred-thousandth part of a second.

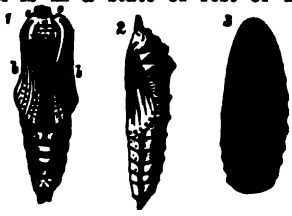
Chronology (kron-ol'ō-ji; Gr. *chronos*, time, and *logos*, discourse), the science which treats of time, and has for its object the arrangement and exhibition of historical events in order of time and the ascertaining of the intervals between them. Its basis is necessarily the method of measuring or computing time by regular divisions or periods, according to the revolutions of the earth or moon. The motions of these bodies produce the natural division of time into years, months and days. As there can be no exact computation of time or placing of events without a fixed point from which to start, dates are fixed from an arbitrary point or *epoch*, which forms the beginning of an *era*. The more important of these are the creation of the world among the Jews; the birth of Christ among Christians; the Olympiads among the Greeks; the building of Rome among the Romans; the Hejira, or flight of Mohammed, among the Mohammedans, etc. See *Epoch*, *Calendar*.

Chronometer (kron-om'e-tẽr), any instrument that measures time, as a clock, watch, or dial; but, specifically, this term is applied to those timekeepers which are used for determining the longitude at sea, or for any other purpose where an accurate measure of time is required, with great portability in the instrument. The chronometer differs from the ordinary watch in the principle of its escapement, which is so constructed that the balance is free from the wheels during the greater part of its vibration, and also in being fitted with a 'compensation adjustment,' calculated to prevent the expansion and contraction of the metal by the action of heat and cold from affecting its movements. Marine chronometers generally beat half-seconds, and are hung in gimbals in boxes 6 to 8 inches square. The pocket chronometer does not differ in appearance from a watch except that it is somewhat larger.

Chronoscope (kron'ō-skōp), an instrument for measuring the duration of extremely short-lived phenomena, such as the electric spark; more especially the name given instruments of various forms for measuring the velocity of projectiles.

Chrudim (*hrŏ'dim*), a town of Bohemia, 62 miles S. E. of Prague, with some manufactures and large horse-markets. Pop. 13,017.

Chrysalis (kris'a-lis), a form which butterflies, moths, flies, and other insects assume when they change from the state of larva or caterpillar and before they arrive at their winged or perfect state. In the chrysalis form the animal is in a state of rest or insensibility, and exists without nutriment, the length of time varying with the species and season. During this period an elaboration is going on in the interior of the chrysalis, giving to the organs of the future animal their proper development.



1, 2, Chrysalis of the White Butterfly-moth: *a*, Palpi or feelers; *b b*, wing-cases; sucker; *e e*, eyes; *x x*, antennæ. 3, Chrysalis of the Oak Eggar-moth.

Chrysanthemum (kris-an'the-mum), a large genus of composite plants, consisting of herbs or shrubs with single, large-stalked, yellow flowers or with many small flowers; the rays are sometimes white. The chrysanthemum of gardens is a Chinese half-shrubby plant (*C. sinense*), whose numerous varieties constitute one of the chief ornaments of our American gardens in October, November and December. The ox-eyed daisy *C. Leucanthemum*

and the corn-marigold, *C. Segĕtum*, are common weeds in Europe.

Chryselephantine (kris-el-e-fan'tĭn; Gr. *chrysos*, gold; *elephas*, ivory), made of gold and ivory combined, a term applied to statues executed in these two substances by the ancient Greeks, as Pheidias' great statue of Athena.

Chrysippus (kri-sip'us), an ancient Greek philosopher belonging to Cilicia, lived about B.C. 282-209. He was the principal opponent of the Epicureans, and is said to have written 700 different works, mostly of a dialectical character; but only a variety of fragments are extant.

Chrysoberyl (kris'ō-ber-il; sometimes called *cymophane*, and, by the jewelers, *oriental chrysolite*), a gem, of a pale yellowish-green color, usually found in round pieces about the size of a pea, but also crystallized in eight-sided prisms. It is an aluminate of beryllium, is next to the sapphire in hardness, and is employed in jewelry, the specimens which present an opalescent play of light being especially admired.

Chrysolite (kris'ō-lĭt), a mineral composed of silica, magnesium and iron. Its prevailing color is some shade of green. It is harder than glass, but less hard than quartz; often transparent, sometimes only translucent. Very fine specimens are found in Egypt and Brazil, but it is not of high repute as a jeweler's stone.

Chrysoloras (kris-o-lo'ras), MANUEL, a distinguished Greek of Constantinople, born the middle of the fourteenth century; died in 1415. He settled as a teacher of Greek literature at Florence, about 1395. He also taught at Milan, Pavia and Rome, thus becoming a chief promoter of the great revival of learning.

Chrysophan'ic Acid, the yellow coloring matter of rhubarb. With potash it gives a fine purple solution, and thus affords a delicate test for the presence of alkalies.

Chrys'oprase (-prāz), a kind of quartz, being merely a variety of chalcedony. Its color is commonly apple-green, and often extremely beautiful, so that it is much esteemed in jewelry. It is translucent, or sometimes semitransparent, and of a hardness little inferior to that of flint.

Chrysostom (kris'os-tom), JOHN, ST. ('golden-mouthed'), a celebrated Greek father of the church, born in Antioch about A.D. 344; died at Comana in Pontus in 407. Secundus, his father, who had the command of the imperial troops in Syria, died soon after the birth of his son, whose early education devolved upon Anthusa, his mother. Chrysostom studied eloquence with Libanius, the most famous orator of his time, and soon excelled his master. After having studied philosophy with Andragathius he devoted himself to the Holy Scriptures, and determined upon quitting the world and consecrating his life to God in the deserts of Syria. He spent several years in solitary retirement, studying and meditating with a view to the church. Having completed his voluntary probation he returned to Antioch in 381, when he was appointed deacon by the Bishop of Antioch, and in 386 consecrated priest. He was chosen vicar by the same dignitary, and commissioned to preach the Word of God to the people. He became so celebrated for the eloquence of his preaching that the Emperor Arcadius determined, in 397, to place him in the archiepiscopal see of Constantinople. He now exerted himself so zealously in repressing heresy, paganism and immorality, and in enforcing the obligations of monachism, that he raised up many enemies, and Theophilus, patriarch of Alexandria, aided and encouraged by the Empress Eudoxia, caused him to be deposed at a synod held at Chalcedon. The emperor banished him from Constantinople, and Chrysostom purposed retiring to Bithynia; but the people threatened a revolt. In the following night an earthquake gave general alarm. In this dilemma Arcadius recalled his orders, and Eudoxia herself invited Chrysostom to return. The people accompanied him triumphantly to the city, his enemies fled, and peace was restored, but only for a short time. A feast given by the empress on the consecration of a statue, and attended with many heathen ceremonies, roused the zeal of the archbishop, who publicly exclaimed against it; and Eudoxia, violently incensed, recalled the prelates devoted to her will, and Chrysostom was condemned and exiled to Armenia. Here he continued to exert his pious zeal until the emperor ordered him to be conveyed to a town on the most distant shore of the Black Sea. The officers who had him in charge obliged the old man to perform his journey on foot, and he died at Comana, by the way. Here he was buried; but in 438 his body was conveyed solemnly to Constantinople, and there interred in the Church of the Apostles, in the sepulcher of the emperor. At a later period his remains were placed in the Vatican at Rome. The Greek Church celebrates his feast on the

13th of November, the Roman on the 27th of January. His works, which consist of sermons, commentaries and treatises, abound with information as to the manners and characteristics of his age.

Chub, a European river fish, of the genus *Cyprinus* or carps; or, as some regard it, of the subgenus *Leuciscus* (*L. cephălus*). The body is oblong, nearly round; the head and back green, the sides silvery, and the belly white. It frequents deep holes in rivers

Chub (*Cyprinus* [*Leuciscus cephălus*).

shaded by trees, but in warm weather floats near the surface, and furnishes sport for anglers. It is indifferent food, and rarely attains the weight of 5 lbs. Allied American species receive the same name.

Chubb, THOMAS, English writer, born in 1679; died in 1746. Although engaged as a glover and chandler, he gave his chief attention to philosophical and theological study, and was celebrated in the Arian controversy for his argumentative keenness. In this connection he published in 1715 *The Supremacy of the Father Asserted*, besides various other moral and theological tracts.

Chubb Lock, a lock so named from the name of its inventor, a London locksmith. It has more tumblers than usual, with the addition of a lever called the detector, which is so fixed that while it does not act under the ordinary application of the key, it cannot fail to move if any one of the tumblers be lifted a little too high, as must be the case in any attempt at picking. This movement fixes the bolt immovably, and renders all further attempts at picking useless.

Chuck Will's Widow, a popular name in the United States for a bird of the goatsucker family, *Antrostŏmus carolinensis*, so called from its cry.

Chumbul (chum'bul), a river of N. W. Hindustan, which rises in the Vindhya Mountains, and falls into the Jumna about 90 miles southeast of Agra, after a course of 650 miles.

Chunam (chŏ-nam'). in the East Indies a name given to a very fine kind of quicklime made from calcined shells or from very pure limestone, and used for chewing with betel.

Chunar (chun'ar), a town and fortress, of Hindustan, 26 miles southwest of Benares, on the Ganges. The fortress stands on a lofty rock rising abruptly from the river. Pop. 9926.

Chung-Kiang, an important commercial city of China, on the Yang-tse-Kiang, at its confluence with the Kia-ling. Pop. 600,000.

Chuprah or Chapra (chup'ra), a town of Hindustan on an affluent of the Ganges. Has an active commerce. Pop. 48,000.

Chuquisaca (chŏ-kē-sa'ka), or SUCRE, a city of South America, the capital of Bolivia; well situated on a plateau between the Amazon and La Plata rivers, 9343 feet above sea-level. It has a cathedral and a university. It was founded by one of Pizarro's officers in 1539. Pop. formerly 27,000, now estimated 12,000.—The province of Chuquisaca has an area of 26,410 square miles; a pop. of 300,000.

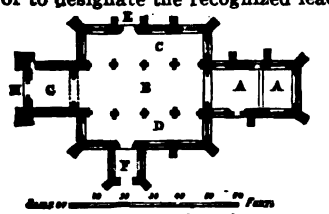
Chur (hŏr), the capital of the Swiss canton of Grisons. See *Coire*.

Church (from Gr. *kyriakon*, from *kyrios*, 'lord'), a word which in its widest sense denotes the whole community of Christians, and was thus used by the New Testament writers. In more restricted significations it denotes a particular section of the Christian com

Islip Church, Northamptonshire.

1, Eastern end and great east window. 2 2, Chancel at its windows. 3, End of nave. 4 4 4 4, Clerestory and windows. 5, South aisle. 6, South porch. 7, Tower. 8 8, Belfry windows. 9, Spire.

munity differing in doctrinal matters from the remainder, as the Roman Catholic Church, the Protestant Church, etc.; or to designate the recognized leading



Plan of Islip Church.

A A, Chancel. B, Nave. C, North aisle. D, South aisle. E, North door. F, South porch. G, Tower. H, West door.

church of a nation, as the English, Scotch, or French Church. In yet another sense it signifies the edifice appropriated to Christian worship. After the conversion of Constantine the basilicæ or public halls and courts of judicature and some of the heathen temples were consecrated as Christian churches. When churches came to be specially built for Christian worship their forms were various—round, octagonal, etc. Later on the form with the cross aisle or transept (*cruciform* churches) became common. Early British churches were built of wood; the first stone churches erected being that of Whithorn, Galloway (6th century), and that of York (7th century). The accompanying illustrations exhibit a type of church which with more or less modification is common in England, and will enable the reader to understand the terms applied to the various parts. (See also *Cathedral.*) Generally speaking, any building set apart for religious ordinances is called a church, though when of a minor kind it is usually designated a *chapel.* The term church, however, is often restricted to the buildings for worship connected with a national establishment. They are classed as *cathedral,* when containing a bishop's throne; *collegiate,* when served by a dean and chapter; *conventual* or *minster,* when connected with a convent or monastery; *abbey* or *priory,* when under an abbot or prior; and *parochial,* when the charge of a secular priest. See *Christianity, Greek Church,* etc.

Church, FATHERS OF THE (*patres ecclesiæ*), teachers and writers of the ancient church who flourished after the time of the apostles and apostolic fathers (the immediate disciples of the apostles), from the second to the sixth century. The most celebrated among the Greek fathers are Clement of Alexandria, Origen, Eusebius, Athanasius and Chrysostom. The most distinguished among the Latin fathers are Tertullian, Augustine, Ambrose and Jerome.

Churchill (church'ill), CHARLES, an English poet and satirist, was born in 1731, and died in 1764. An early and imprudent marriage was followed by his admission to holy orders. In 1761 he published anonymously a poem called *The Rosciad,* a clever satire on the chief actors of the day, and *The Apology,* a reply to his critics. A course of dissipation and intemperance followed, which excited much animadversion, and elicited from him his satire, *Night.* Churchill now threw aside all regard for his profession, and became a complete man about town and a professional political satirist. His other productions include *The Ghost, The Prophecy of Famine, Epistle to Hogarth,* etc.

Churchill, RANDOLPH HENRY SPENCER, LORD, second son of the sixth Duke of Marlborough, born in 1849; died in 1895. By 1884 he had risen to the position of leader of the Conservative party, and in 1885 became Indian secretary in Lord Salisbury's government. On the defeat of Gladstone's Irish Bill in 1886, Churchill became leader of the House of Commons and Chancellor of the Exchequer, but resigned at the close of the year.

Churchill, WINSTON, an American author, born in St. Louis, Missouri, November 10, 1871; graduated at the Naval Academy, Annapolis, but devoted himself to literature. His novels include *Richard Carvel* (1899), *The Crisis* (1901), *The Crossing* (1904), *Coniston* (1906), and *Mr. Crewe's Career* (1908).

Churchill, WINSTON LEONARD SPENCER, eldest son of Lord Randolph Churchill, born November 30, 1874. He joined the army and took part in a number of important operations. In 1908 he became president of the Board of Trade in Asquith's cabinet. In 1910 he was made Home Secretary; in 1912 First Lord of the Admiralty, serving through a part of the Great War. He was appointed minister of munitions in 1916.

Churchill River, a river of the Northwest Territories of Canada, which rises in La Crosse Lake, forms or passes through various lakes or lake-like expansions, and enters Hudson Bay after a northeasterly course of about 800 miles. It is called also Missinnipoi or English river.

Churching of Women, a form of thanksgiv-

ing after childbirth, adopted from the Jewish ceremony of purification, and practised still in the Roman Catholic and Anglican churches, the latter having a special service in the Prayer Book.

Church-rate, in England a rate raised by resolution of a majority of the parishioners in vestry assembled, from the occupiers of land and houses within a parish, for the purpose of maintaining the church and its services. In 1868 an act was passed abolishing compulsory church-rates, except such as, under the name of church-rates, were applicable to secular purposes.

Churchwardens (church-wąr'dens), officers, generally two for each parish in England, who superintend the church, its property and concerns. They are annually chosen by the minister and parishioners, according to the custom of each parish.

Churchyard (church'yârd), ground in which dead are buried, adjoining a church.

Church'yard Beetle, the *Blaps mortisąga*, a very common insect found in dark, damp and dirty places; it is black, but little shining, and the tip of the elytra forms a short, obtuse point.

Churn, a vessel in which milk or cream is agitated, to separate the oily globules from other parts and gather them as butter. In the older forms a plunger worked vertically in a tub; in some of the modern forms dashers are turned by a crank, while in others the tub itself is swung to and fro, causing the milk to dash against the ends and sides. In the combined churn and butter-worker the butter can be partly or wholly worked after the buttermilk is drawn off; it is operated by power and used to considerable extent in creameries.

Churrus. See *Charras.*

Churubusco (chų-rų-bųs'kō), a village 6 miles S. of Mexico, the scene of a battle between the Mexicans under Santa Anna and the Americans under Scott, Aug. 20, 1847, in which the former were defeated.

Chusan Islands, (chō-sän'), a group of islands on the east coast of China, the largest in the archipelago having the name Chusan, and being about 21 miles long, and from 6 to 11 broad. Pop. about 200,000. Chief town Ting-hae, pop. 40,000. Rice and tea are the principal products. From its situation near the mouths of the Yang-tse-kiang, which river forms the great channel of communication with the capital of the empire, Chusan is considered as the key of China, and was temporarily taken possession of by the British in 1840, 1841 and 1860. The sacred island of Pu-tu to the east of the above is covered with Buddhist temples, monasteries, etc., and is entirely inhabited by priests.

Chutia Nagpur. See *Chota Nagpore.*

Chutny, or CHUTNEE (chut'nē), in the East Indies a condiment compounded of sweets and acids. Ripe fruit (mangoes, raisins, etc.), spices, sour herbs, cayenne, lemon-juice, are the ordinary ingredients. They are pounded and boiled together, and then bottled for use.

Chyle (kīl), in physiology, a white or milky fluid separated from aliments by means of digestion. Chyle is found in the intestines after the food has been mixed with the bile and pancreatic juice. It is absorbed by the lacteal vessels, terminating in the inner surface of the small intestines, chiefly the jejunum, and thence passes by numerous converging streams into the main trunk of the absorbent system, called the thoracic duct, through which it is gradually poured into the blood of the left subclavian vein at a short distance before it enters the right side of the heart. The chemical constituents of chyle are nearly the same as those of the blood itself.

Chyme (kīm), food after it has been digested in the stomach. In the stomach it forms a pulpy mass which passes on into the small intestine, and being acted on by the bile, pancreatic fluid and intestinal juice, is separated into chyle and non-nutritious matters, which latter are carried off by the evacuations.

Cibber (sib'ber), COLLEY, a dramatic writer and actor, born at London in 1671; died in 1757. He took to the stage in 1689. His first dramatic effort, *Love's Last Shift*, appeared in 1695; and it was followed by *Woman's Wit*, the *Careless Husband* and the *Non-juror*, of which the *Hypocrite* of the modern stage is a new version. A court pension and the appointment of poet-laureate drew upon him the rancor of the wits and poets of the day, including Pope. He is author of about twenty-five dramas, the amusing *Apology for the Life of Colley Cibber*, etc.—His son THEOPHILUS, born in 1703; drowned in his passage to Ireland 1757, was an actor and dramatic writer. He was much inferior to his father in capacity.—SUSANNA MARIA, wife of Theophilus Cibber (born 1716; died 1766), was one of the best actresses on the English stage. She was sister of Dr. Arne (composer of *Rule, Britannia*), who taught her music, and introduced her

in one of his operas at the Haymarket Theater. Handel composed pieces expressly adapted to her voice, and used to instruct her in singing them. She subsequently made her appearance in tragedy, and gained universal admiration. Garrick is said to have exclaimed, when informed that she was dead, 'Then tragedy has expired with her.'

Cibol (sib'ul; *Allium fistulōsum*), a perennial plant of the onion genus, a native of Siberia, with hollow stems larger than those of the chive; used for culinary purposes.

Ciborium (si-bō'ri-um), in the Roman Catholic Church, a kind of cup or chalice made of gold or silver and containing the bread used in the sacrament. Also a sort of canopy over an altar.

Cicada (si-kā'da), the popular and generic name of certain insects belonging to the order Hemiptera, a suborder Homoptera, of many species. The males have on each side of the body a kind of drum, with which they can make a considerable noise. This, regarded as the insects' song, was much admired by the ancients, and is frequently referred to by their poets. The largest European species are about an inch long, but some American species are much larger, and their note much louder. They are nearly all natives of tropical or warm temperate regions. The female has the posterior extremity of the abdomen furnished with two serrated horny plates, by means of which it pierces the branches of trees to deposit its eggs. An English species (*C. anglica*) is found in the New Forest. The seventeen years' locust (*Cicāda septemdecim*) occurs in many parts of the United States.

Cicala (chi-kā'lā). The cicada.

Cicely (sis'e-li), a popular name applied to several umbelliferous plants. Sweet cicely, or sweet chervil, is *Myrrhis odorāta*, a plant common in Britain and in other parts of Europe. It was formerly used in medicine, and in some parts of Europe is used as an ingredient in soups. Sweet cicely is found in our woods from Canada to Virginia.

Cicero (sis'e-rō), MARCUS TULLIUS, the greatest of the Roman orators, was born 106 B.C. at Arpinum. His family was of equestrian rank, and his father, though living in retirement, was a friend of some of the chief public men. He received the best education available, studied philosophy and law, became familiar with Greek literature, and acquired some military knowledge from serving a campaign in the Marsic war. At the age of twenty-five he came forward as a pleader, and having undertaken the defense of Sextus Roscius, who was accused of parricide, procured his acquittal. He visited Greece B.C. 79, conversed with the philosophers of all the schools, and profited by the instruction of the masters of oratory. Here he formed that close friendship with Atticus of which his letters furnish such interesting evidence. He also made a tour in Asia Minor and remained some time at Rhodes, where he visited the most distinguished orators and took part in their exercises. On his return to Rome his displays of eloquence proved the value of his Grecian instruction, and he became one of the most distinguished orators in the forum. In B.C. 76 he was appointed quæstor of Sicily, and behaved with such justice that the Sicilians gratefully rememberd him and requested that he would conduct their suit against their governor Verres. He appeared against this powerful robber, and the crimes of Verres were painted in the liveliest colors in his immortal speeches. Seven of the Verrine orations are preserved, but only two of them were delivered, and Verres went into voluntary exile. After this suit Cicero was elected to the office of ædile, B.C. 70, became prætor in 67, and consul in 63. It was now that he succeeded in defeating the conspiracy of Catiline (see *Catiline*), after whose fall he received greater honors than had ever before been bestowed upon a Roman citizen. He was hailed as the saviour of the state and the father of his country (*parens patriæ*), and thanksgivings in his name were voted to the gods. But Cicero's fortune had now reached the culminating point, and soon was to decline. The Catilinarian conspirators who had been executed had not been sentenced according to law, and Cicero, as chief magistrate, was responsible for the irregularity. Publius Clodius, the tribune of the people, raised such a storm against him that he was obliged to go into exile (B.C. 58). On the fall of the Clodian faction he was recalled to Rome, but he never succeeded in regaining the influence he had once possessed. In B.C. 52 he be-

Cicero.—Antique bust.

came proconsul of Cilicia, a province which he administered with eminent success. As soon as his term of office had expired he returned to Rome (B.C. 49), which was threatened with serious disturbances owing to the rupture between Cæsar and Pompey. He espoused the cause of Pompey, but after the battle of Pharsalia he made his peace with Cæsar, with whom he continued to all appearance friendly, and by whom he was kindly treated, until the assassination of the latter (44 B.C.). He now hoped to regain his political influence. The conspirators shared with him the honor of an enterprise in which no part had been assigned him; and the less he had contributed to it himself the more anxious was he to justify the deed and pursue the advantages which it offered. Antony having taken Cæsar's place, Cicero composed those admirable orations against him, delivered in B.C. 43, which are known to us by the name of *Philippics* (after the speeches of Demosthenes against Philip of Macedon). His implacable enmity towards Antony induced him to favor young Octavianus, who professed to entertain the most friendly feelings towards him. Octavianus, however, having possessed himself of the consulate, and formed an alliance with Antony and Lepidus, Cicero was proscribed. In endeavoring to escape from Tusculum, where he was living when the news of the proscription arrived, he was overtaken and murdered by a party of soldiers; and his head and hands were publicly exhibited in the forum at Rome. He died in his sixty-fourth year, B.C. 43. Cicero's eloquence has always remained a model. After the revival of learning he was the most admired of the ancient writers; and the purity and elegance of his style will always place him in the first rank of Roman classics. His works, which are very numerous, consist of orations; philosophical, rhetorical and moral treatises; and letters to Atticus and other friends. The life of Cicero was written by Plutarch, and there are modern lives by Middleton, Forsyth and others. Cicero left a son of the same name by his wife Terentia. Young Marcus was born in B.C. 65, was carefully educated, and distinguished himself in military service. In B.C. 30, Octavianus (Augustus) assumed him as his colleague in the consulship, and he was afterwards governor of Asia or Syria.—Cicero's younger brother, QUINTUS, was a man of some note both as a public character and as a writer. He was married to a sister of Atticus, and was put to death at the same time as the orator.

Cicero, a residential town in Cook Co., Illinois, in the vicinity of Chicago. Pop. (1920) 44,995.

Cicindela (si-sin-dē'la), a genus of insects to which *C. campestris*, the tiger-beetle, one of the most common of American species, belongs.

Ciconia (si-kō'ni-a), the genus of birds to which the stork belongs.

Cicuta (si-kū'ta), a genus of umbelliferous plants, including *C. virōsa*, water-hemlock or cowbane. See *Hemlock*.

Cid (sid), an epithet (from the Ar. *seid*, a lord, a chief, a commander) applied to Ruy or Roderigo Diaz, Count of Bivar (born in 1026; died in 1099), the national hero of Spain. He signalized himself by his exploits in the reigns of Ferdinand, Sancho and Alphonso VI of Leon and Castile; but the facts of his career have been so mixed with glorifying myths that it is scarcely possible to separate them. His life, however, appears to have been entirely spent in fierce warfare with the Moors, then masters of a great part of Spain. His exploits are set forth in a special chronicle, and in a Castillian poem, probably composed about the end of the twelfth century. The story of his love for Ximena is the subject of *Le Cid* of Corneille. Whatever chronicles and songs have conveyed to us of the history of the Cid is collected in Southey's *Chronicle of the Cid*.

Cider (sī'dėr), a liquor made from the expressed juice of apples. The apples are ground and crushed until they are reduced to a pulp, the juice is allowed to run into casks, where it is freely exposed to the air until fermentation takes place, when a clear liquor of a pale-brown or amber color is the result. It contains from 4 to 8 per cent. of alcohol. Winter varieties of apples make the most desirable cider.

Cienfuegos (thē-en-fō-ā'gōs), a seaport of Cuba, on the south coast of the island, with a safe and capacious harbor on the Bay of Jagua, 130 miles S.E. of Havana, with which (and other towns) it is connected by railway. It is among the finest towns of the island, and exports sugar, wax, timber, cocoa, molasses and tobacco. Pop. 82,092.

Cieza (thē-ā'thȧ), a town of Spain, in the province and 24 miles N.W. of Murcia, on an eminence near the right bank of the Segura. Pop. 13,626.

Cigar (si-gär'), a small roll of manufactured tobacco leaves carefully made up, and intended to be

smoked by lighting at one end and drawing the smoke through it. The choicest cigars are those made in and imported from Havana. Cigars are consumed in enormous quantities in America and Europe. Medicated cigars, or cigars made of some substance having remedial properties, are often used for certain complaints, as stramonium cigars for asthma. *Cheroots* are peculiarly-shaped cigars much thicker at one end than the other, and are largely imported from Manila.

Cigarette (sig-a-ret'), a sort of small cigar made by rolling fine-cut tobacco in thin paper specially prepared for the purpose. It is now a favorite form with smokers and immense numbers are used.

Cignani (chē-nyä'nē), CARLO, an Italian painter, born at Bologna in 1628; died 1719; the last great painter of the Bolognese school. His finest paintings are frescoes in the saloon of the Farnese Palace, Bologna, and in the cupola of the Church of the Madonna del Fuoco at Forli. His paintings have been engraved by various artists.

Cigoli (chē'go-lē), LUDOVICO CARDI DA. See *Cardi*.

Cilia (sil'i-a; L. 'eyelashes'), small generally microscopic, hairlike organs or appendages, averaging 1/3000 inch in length, found on the surface of the tissues of most animals, and in some vegetable organisms (as Volvox), chiefly on tissues which are in contact with water, or which produce fluid secretions. They are constantly in a state of active movement, and communicate to the fluid with which they are in contact a corresponding motion. This is called *vibratile* or *ciliary motion*. In most of the lower aquatic animals the respiratory function is aided by means of the vibratile cilia; many animalcules move by a similar mechanism; and in the highest classes of animals cilia have a share in the performance of some important functions.

Cilicia (si-lish'e-a), in ancient geography, the region between Pamphylia and Syria, lying S. of Mount Taurus. Alexander made Cilicia a Macedonian province; it then passed to the Syrians. Under Augustus it became an imperial province. It now forms the Turkish vilayet of Adana.

Cimabue (chē-mä-bō'ā), GIOVANNI, Italian painter, born at Florence in 1240; died probably in 1302. Two Greek artists, who were invited to Florence to paint a chapel in the Church of Santa Maria Novella, were his first masters. He is considered one of the chief restorers of the art of painting in Italy, which at that time had degenerated into mechanical conventionalism. His best paintings are in the Church of Santa Maria Novello at Florence, and in the

Cimabue.

Sacro Convento at Assisi. Among his pupils was Giotto, whom he discovered in a boy shepherd drawing figures on the smooth surface of a rock while tending his sheep.

Cimarosa (chē-mä-rō'sä), DOMENICO, a composer, born at Naples in 1749, -54, or -55; died at Venice 1801. He composed about 120 operas, most of which are comic. His best-known work is *Il Matrimonio Segreto* ('The Secret Marriage').

Cimbri (sim'brī), a tribe of ancient Europe, the origin of which is involved in obscurity. They were regarded as Germans by the Romans, who gave the name Chersonesus Cimbrica to what is now Jutland. Greek writers connected them with the Scythian Cimmerii of the Crimea; while modern writers suppose that they were Celtic, and that Cimbri is the same as the Cymri of Britain. In the second century B.C. they made formidable incursions into Gaul and Spain, but were finally routed by the Consul Marius at Vercelli B.C. 101.

Cimex (sī'meks). See *Bug*.

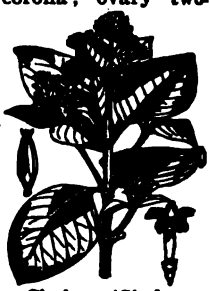
Cimmerians (si-mē'ri-anz), an ancient nomadic tribe that occupied the Tauric Chersonese (Crimea) and Asiatic Sarmatia (the country of the lower Volga). They are said, in pre-Homeric times, to have ravaged Asia Minor, and in a second invasion to have penetrated to Æolis and Ionia, and to have held possession of Sardis. A mythical people mentioned in the *Odyssey* as dwelling beyond the ocean-stream in the thickest gloom were also termed Cimmerii, a fable which gave rise to the phrase 'Cimmerian darkness.'

Cimolian Earth, or CIMOLITE (sim'ō-lit), a species of clay or hydrous silicate of alumina, named in ancient times from Cimōlos or Argentiera, one of the Cyclades, where it is still to be found. It is of whitish and soft texture, molders into a fine powder, and effervesces with acids. In classical times it was used as a detergent, as a soap for cleaning delicate fabrics, and by the bath-keepers.

Cimolos (si-mō'los). See *Argentiera.*

Cimon (sī'mon, kī'mon), an ancient Athenian general and statesman, was a son of the great Miltiades. He fought against the Persians in the battle of Salamis (480 B.C.), and shared with Aristides the chief command of the fleet sent to Asia to deliver the Greek colonies from the Persian yoke. The return of Aristides to Athens soon after left Cimon at the head of the whole naval force of Greece. He distinguished himself by his achievements in Thrace, having defeated the Persians by the Strymon, and made himself master of the country. He conquered the pirate-island of Scyros, subdued all the cities on the coast of Asia Minor, pursued the Persian fleet up the Eurymedon, destroyed more than 200 of their ships, and then, having landed, on the same day entirely defeated their army (B.C. 469). He employed the spoil which he had taken in the embellishment of Athens, and in 463 reduced the revolted Thasians; but the popular leaders, beginning to fear his power, charged him on his return with having been corrupted by the King of Macedon. The charge was dropped, but when Cimon's policy of friendship to the Lacedæmonians ended in the latter insulting the troops sent by Athens to their aid, his opponents secured his banishment. He retired into Bœotia, and his request to be allowed to fight with the Athenians against the Lacedæmonians in 457 at Tanagra was refused by the suspicious generals. Eventually Cimon was recalled at the instance of Pericles to conclude a peace with Lacedæmon. He died shortly after, in 449, while besieging Citium in Cyprus.

Cinchona (sin-kō'na or sin-chō'na; the name is from the Countess of Chinchon, wife of a viceroy of Peru, a lady who was cured of fever by the bark in 1638), an important genus of trees, type of the order Cinchonaceæ, which consists of gamopetalous, calycifloral dicotyledons, sometimes regarded as a suborder of Rubiaceæ. They are trees, shrubs, or herbaceous plants, with simple opposite leaves, flowers arranged in panicles or corymbs; calyx adherent, entire or toothed; corolla regular; stamens attached to corolla; ovary two-celled; fruit inferior, dry or succulent. They are found almost exclusively in the tropics, and many of the species are of great medicinal importance as tonics, febrifuges, emetics and purgatives. Among their chief products are Peruvian bark, quinine, ipecacuanha, coee, chayroot, etc. The genus *Cinchona* consists of trees seldom exceeding 40 or 50 ft. in height, with simple, opposite, entire leaves and small flowers, inhabiting chiefly the east side of the Andes of Peru, Bolivia, Ecuador and Colombia. The valuable Peruvian bark is yielded by various species: crown or loxa bark by *C. condaminea*, gray or huanuco bark by *C. micrantha*, and *C. nitida*, red-bark by *C. succirubra*, yellow or calisava bark by *C. calisaya*. From the wasteful method of cutting down the trees to get their bark it was believed that there would soon be a dearth of the valuable medicine, and hence cinchona plants were taken from their native regions and plantations formed in various tropical countries, so that Ceylon, India, Java, etc., are now important sources of Peruvian bark. The bark is taken off in strips longitudinally, and is in time renewed by natural growth. See *Bark (Peruvian), Quinine.*



Cinchona (*Cinchona succirubra*).

Cinchonine (sin'kō-nīn), a vegetable alkaloid contained in all the varietes of Peruvian bark, but principally in *C. lancifolia*, or pale bark. Though less bitter than quinine, it may be substituted for it in larger quantities.

Cincinnati (sin-sin-ā'ti), a city of Ohio, ranking sixteenth in population in the United States, on the north bank of the Ohio River, opposite the mouth of the Licking and 476 miles by water s. of Pittsburgh. It was founded in 1788; incorporated as a village in 1802 by the Northwest Territory; and became a city in 1819. It was partially built in a valley, surrounded by seven picturesque hills. It is a city of beautiful homes and stately buildings. St. Peter's Roman Catholic Cathedral has one of the finest domes in the Western States. Other buildings of note are the New Court House, St. Francis De Sales, Rockdale

Temple, the Union Central Building (34 stories high), the buildings of the University of Cincinnati, the Art Museum and Art Academy, The Ohio Mechanics Institute, the great Music Hall, where the famous Cincinnati May festivals are given; the Government Building and Custom House, Lane Theological Seminary, Cincinnati University of Music, the City Hall (constructed of granite and Amherst stone, costing $2,000,000), and many other important buildings. The Lincoln Statue, by George Grey Barnard, in Lytle Park, which was unveiled in 1917, has attracted world-wide attention. Of special interest are the homes of Lyman Beecher, Harriet Beecher Stowe, and Alice and Phœbe Cary.

Cincinnati ranks high as a manufacturing city, the annual output of its industries ranging from $200,000,000 to $250,000,000. The products include railway materials and supplies, carriages, furniture, leather, boots and shoes, clothing, candles, soap and oils, and many other articles. Next to Chicago it is the greatest pork market in the Union. It is also a very important horse market and a leading exchange for grain and pig iron. There are abundant supplies of lumber, hard and soft wood, iron and scrap iron, clay, sand, lime, stone, copper, and certain mineral deposits. Pop. (1900) 325,902; (1910) 363,591; (1920) 401,247.

Cincinnati, SOCIETY OF THE, an organization originating among the officers of the American revolutionary army in 1783, the right of membership being restricted to officers of the Continental army and their eldest male descendants or eldest male of next collateral branch. The name is after Lucius Quinctius Cincinnatus.

Cincinnatus, LUCIUS QUINCTIUS, a wealthy Roman patrician, born about 519 B.C. He succeeded in 460 to the consulship, and then retired to cultivate his small estate beyond the Tiber. In 458 B.C. the messengers of the senate found him at work when they came to summon him to the dictatorship. He rescued the army, defeated the Æqui, and returned quietly to his farm. At the age of eighty he was again appointed dictator to oppose the ambitious designs of Spurius Mælius.

Cinematograph (sin-ē-mat'ō-graf), an instrument consisting of a lantern with mechanism for projecting photographs on a screen in such rapid succession that the objects photographed appear to be in motion. These pictures are on a long film which is wound from one spool to another, each film being before the objective for an instant, when a powerful light passes through it. See *Moving Picture Machine.*

Cineraria (sin-e-rā'ri-a), a genus of plants, nat. order *Compositæ*, chiefly found in South Africa.

Cinna (sin'na), LUCIUS CORNELIUS, an eminent Roman, an adherent of Marius, who, obtaining the consulship B.C. 87, along with Gneus Octavius, impeached Sulla and endeavored to secure the recall of Marius. Being driven from the city of Octavius, he found aid in the other Italian cities, and invested Rome while Marius blockaded it from the sea. On its capture the friends of Sulla were massacred, and Cinna and Marius made themselves consuls (B.C. 86); but after the death of Marius the army refused to follow Cinna against Sulla, and put him to death in B.C. 84.

Cinnabar (sin'a-bar), red sulphide of mercury, the principal ore from which that metal is obtained, occurring abundantly in Spain, California, China, etc. It is of a cochineal-red color, and is used as a pigment under the name of vermilion. See *Mercury* and *Vermilion.*

Cinnamomum (sin-a-mō'mum), a genus of plants, nat. order *Lauraceæ*, natives of tropical Asia and the Polynesian Islands. All the species possess an aromatic volatile oil, and one of them yields true cinnamon, while others yield cassia.

Cinnamon (sin'a-mon), the bark of the under branches of a species of laurel (*Cinnamōmum zeylanicum*—see *Cinnamomum*) which is chiefly found in Ceylon, but grows also in Malabar and other parts of the East Indies. The tree attains the height of 20 or 30 feet, has oval leaves, pale-yellow flowers, and acorn-shaped fruit. The Ceylonese bark their trees in April and November, the bark curling up into rolls or quills in the process of drying; the smaller quills being introduced into the larger ones. These are then assorted according to quality by tasters, and made up into bundles. An oil of cinnamon is prepared in Ceylon, but the oil of cassia is generally substituted for it; indeed, the cassia bark is often substituted for cinnamon, to which it has some resemblance,

Cinnamon (*Cinnamōmum zeylanicum*).

although in its qualities it is much weaker. The leaves, the fruit, and the root of the cinnamon plant all yield oil of considerable value; that from the fruit, being highly fragrant and of thick consistence, was formerly made into candles for the sole use of the King of Ceylon.

Cinnamon-stone, a variety of garnet, of a cinnamon, hyacinth-red, yellowish-brown, or honey-yellow color, found in Scotland, Ireland, Ceylon, etc. The finer kinds are used as gems.

Cino da Pistoia (chē'nō dä pes-tō'yä), an Italian jurisconsult and poet, born in 1270 at Pistoia. He was the friend of Petrarch and of Dante, and ranks among the best of the early Italian poets. His poems were first published at Rome in 1558.

Cinq-Mars (saṇk-märs), HENRI COIFFIER DE RUZÉ, MARQUIS DE, favorite of Louis XIII, born in 1620, and introduced at court by Cardinal Richelieu. The king made him master of the robes and grand equerry of France when only in his nineteenth year, and he soon aspired, not only to a share in the management of public affairs, but even to the hand of the beautiful Maria di Gonzaga, Princess of Mantua. Thwarted, however, by the cardinal, Cinq-Mars concocted a plot for the overthrow of Richelieu, and entered into treaty with Spain. To propitiate Richelieu the king was compelled to sacrifice his favorite, who was arrested at Narbonne and beheaded with his friend, the young councilor De Thou, at Lyons in 1642.

Cinque-cento (chēn'kwä-chen-tō; It., lit. 500, but used as a contraction for 1500, the century in which the revival took place), a term employed in reference to the decorative art and architecture belonging to that attempt at purification of style and reversion to classical forms introduced after the beginning of the sixteenth century in Italy. The term is often applied to ornament of the sixteenth century in general, properly included in the term *Renaissance.*

Cinque-foil (singk'foil), in architecture, an ornament in the Gothic style, consisting of five foliated divisions, often seen in circular windows.

Cinque Ports (singk), originally the five English Channel ports of Hastings, Romney, Hythe, Dover and Sandwich, on the S. E. coast of England, to which were added subsequently the towns of Winchelsea, Rye, and Seaford. They were granted special privileges by the later Saxon and earlier Norman kings, on condition of providing a certain number of ships during war, there being no permanent English navy previous to the reign of Henry VII. Each port returned two members to parliament, but after the Reform Act of 1832, Hastings, Dover, and Sandwich alone retained this privilege, Rye and Hythe returning one each, and the remaining towns none. Sandwich was afterwards disfranchised for corruption, and by the act of 1885, Hastings and Dover were each deprived of a member, and Rye ceased to be a borough. They are, collectively, in the jurisdiction of a lord warden, who receives $15,000 a year for his sinecure.

Cintra (sēn'trä), a town of Portugal, 15 miles W. N. W. Lisbon, finely situated on the slope of the Sierra de Cintra, and much resorted to by the wealthier inhabitants of Lisbon. The kings of Portugal had a palace with fine gardens at Cintra. The town is celebrated for the convention entered into there in 1808, by which the French, after their defeat at Vimeira, were conveyed to France. Pop. 5914.

Cione (chi-ō'nä), ANDREA DI. See *Orcagna.*

Ciotat (sē-ō-tä), LA, a seaport of France, on the Mediterranean, 15 miles S. E. of Marseilles, surrounded by an old rampart, and having well-built houses and spacious streets. Shipbuilding is carried on and an extensive coasting trade. Pop. 10,034.

Ciphers (sī'ferz), signs used to represent numbers, whether borrowed signs, as letters, with which the Greeks designated their numbers, or peculiar characters, as the modern or Arabic ones. The ciphers, such as they are at present, 1, 2, 3, 4, 5, 6, 7, 8, 9, 0, did not come into common European use until the eleventh century. For *cipher* as applied to methods of secret writing see *Cryptography.*

Cippus (sip'us), in Roman antiquities, a low column generally rectangular and sculptured, and often bearing an inscription. They served as sepulchral monuments, as milestones and boundaries, and in some cases to receive the inscribed decrees of the senate.

Cipriani (chē'prē-ä'nē), GIAMBATTISTA, an Italian painter and engraver, born at Pistoia in 1732; went to England in 1754; died at London in 1785. He was one of the first fellows of the Royal Academy, the diploma of which he designed. He furnished Bartolozzi with the subjects of some of his finest engravings.

Circassia (sir-kash'i-a), or TCHERKESSIA, a mountainous region in the southeast of European Russia, lying chiefly on the north slope of the Caucasus, partly also on the south, and bounded on the west by the Black Sea, and now forming part of the lieutenancy of the Caucasus. The mountains, of which the culminating heights are those of Mount Elbruz, are intersected everywhere with steep ravines and clothed with thick forests, and the territory is principally drained by the Kuban and its tributaries. Its climate is temperate, its inhabitants healthy and long-lived. The people call themselves Adighé, the name *Tcherkess* (robbers) being of Tatar origin. They are divided into several tribes speaking widely-different dialects. While they retained their independence their government was of a patriarchal character, but every free Circassian had the right of expressing his opinion in the assemblies. They possessed none but traditional annals and laws. Polygamy was permissible in theory, but not common. The duties of hospitality and vengeance were alike binding, and a Spartan morality existed in the matter of theft. Their religion, which is nominally Moslem, is in many cases a jumble of Christian, Jewish, and heathen traditions and ceremonies. As a race the Circassians are comely, the men being prized by the Russians as warriors, and the women by the Turks as inmates of the harem, a position generally desired by the women themselves. The early history of Circassia is obscure. Between the 10th and 13th centuries it formed a portion of the empire of Georgia, but in 1424 the Circassians were an independent people, and at war with the Tatars of the Crimea, etc., to whose khans, however, some were occasionally tributary. In 1705 the Tatars were defeated in a decisive battle, but shortly after the territorial encroachments of the Russians on the Caucasian regions began, and in 1829 the country was formally annexed by them. A long and heroic resistance was made by the Circassians under their leader Schamyl, and on being reduced to submission numbers of the inhabitants emigrated to the Turkish provinces. In the north and east, however, tribes of the Circassian stock remain. The Circassians, properly so called, have been estimated to number from 500,000 to 600,000.

Circe (sêr-sē), a fabled sorceress of Greek mythology, who lived in the island of Ææa, represented by Homer as having converted the companions of Ulysses into swine after causing them to partake of an enchanted beverage. Ulysses under the guidance of Hermes compelled her to restore his companions, and afterwards had two sons by her.

Circensian Games (sir-sen'si-an). See *Circus*.

Circinate (sir'si-nāt) in botany, said of leaves or fronds, as those of ferns, that are rolled up like a watch-spring before expanding.

Circle (sir'kl), a plane figure contained by one line, which is called the *circumference*, and is such that all straight lines drawn from a certain point (the *center*) within the figure to the circumference are equal to one another. The properties of the circle are investigated in books on geometry and trigonometry. Properly the curve belongs to the class of *conic sections*, and is a curve of the *second order*. A *great circle* of a sphere is one that has its center coinciding with that of the sphere. The celebrated problem of 'squaring the circle' is to find a square whose area shall be equal to the area of any given circle. It is not possible to do so. All that can be done is to express *approximately* the ratio of the length of the circumference of the circle to the diameter, and to deduce the area of the figure from this approximation. If the diameter be called unity, the length of the circumference of the circle is 3.1415926535...; and the area of the circle is found by multiplying this number by the square of the radius. Thus the area of a circle of 2 feet radius is 3.14159 × 4. or 12.56636 square feet approximately. For trigonometrical calculations the circumference of the circle is divided into 360 equal parts called degrees, each degree is divided into 60 minutes, and each minute into 60 seconds.

Circle, MURAL. See *Mural Circle*.

Circleville, a city, county seat of Pickaway Co., Ohio, on Scioto River, 30 miles s. of Columbus. It has large strawboard plant, canneries, flour mills, grain elevators, carriage and broom factories. On Pennsylvania and Norfolk & Western railroads. Pop. 7049.

Circuit (sêr'kit), a division of a country for judicial purposes, to some town or towns in which judges come at regular periods to administer justice.

Circuit Courts, a term applied distinctively to a class of the Federal courts of the United States, of which terms are held in two or more places successively, in the various circuits into which the country is divided for the purpose.

Circular Notes (sir'kū-lâr), notes or letters of credit furnished by bankers to persons about to travel abroad. Along with the notes the traveler receives a 'letter of indication' bearing the names of certain foreign bankers who will cash such notes on presentation, in which letter the traveler must write his name. On presentation the foreign banker can demand to see the letter of indication, and by causing the presenter to write his name can compare the signature thus made with that in the letter, and so far satisfy himself as to the identity of the person presenting the note.

Circulating Medium. See *Currency*.

Circulation (sėr-kū-lā'shun), in an organism, the flowing of sap or blood through the veins or channels, by means of which the unceasing and simultaneous movements of composition and decomposition manifested in organic life are carried on. Although Galen, who had observed the opposite directions of the blood in the arteries and veins, may be said to have been upon the very point of discovering its circulation, the discovery was reserved for William Harvey, who in 1628 pointed out the continuity of the connections between the heart, arteries, and veins, the reverse directions taken by the blood in the different vessels, the arrangements of valves in the heart and veins so that the blood could flow only in one direction, and the necessity of the return of a large proportion of blood to the heart to maintain the supply. In 1661 Malpighi exhibited microscopically the circulation in the web of a frog's foot, and showed that the blood passed from arteries to veins by capillaries or intermediate vessels. This finally established the theory with regard to animals, but the movements of sap in vegetables were only traced with difficulty and after numerous experiments. Many physiologists indeed are still disposed to refuse the term 'circulation' to this portion of the economy of plants; but though sap, unlike the blood, does not exhibit movements in determining vessels to and from a common center, a definite course is observable. In the stem of a dicotyledonous tree, for example, the sap describes a sort of circle, passing upwards from the roots through the newer woody tissue to the leaves, where it is elaborated under the action of air and light; and thence descending through the bark towards the root, where what remains of it is either excreted or mixed with the new fluid, entering from the soil for a new period of circulation. In infusorial animalcules the movement of the fluids of the body is maintained by that of the animal itself and by the disturbing influence of nutritive absorption. In the Cœlenterata (zoophytes, etc.) the movement receives aid besides from the action of cilia on the inner walls of the body. The Annelids, as the earthworm, possess contractile vessels traversing the length of the body. The Insects, Crustaceans, Myriapods, and Spiders have a dorsal tube, a portion of which may be specially developed as a heart. The blood is driven to the tissues, in some cases along arterial trunks, being distributed not in special vessels, but simply through the interstices of the tissues. From the tissues it is conveyed, it may be, by special venous trunks to a venous sinus which surrounds the heart and opens into it by valvular apertures. The mollusca have the heart provided with an auricle and a ventricle, as in the snail and whelk; two auricles, one on either side of the ventricle, as in the fresh-water mussel; or two auricles and two ventricles, as in the ark-shells. Among the ascidians, which stand low in that division of animals to which the molluscs belong, the remarkable phenomenon is encountered of an alternating current, which is rhythmically propelled for equal periods in opposite directions. All vertebrated animals (except *Amphioxus*) have a heart, which in most fishes consists of an auricle and ventricle, but in the mudfishes (*Lepidosiren*) there are two auricles and one ventricle; and this trilocular heart is found in the amphibians, and in most reptiles except the crocodiles, which, like birds and mammals, have a four-chambered organ consisting of two auricles and two ventricles. In these two last-named classes the venous and arterial blood are kept apart; in the trilocular hearts the two currents are mixed in the ventricle. For circulation in man and the higher animals see *Heart*.

Circumcision (sir'kum-sizh-un), the removal of the foreskin from the male generative organ, a surgical operation sometimes required by anatomical conditions. Also a rite common among the Semites, though by no means peculiar to them, and possibly derived by them from the Egyptians or from some non-Semitic source. At any rate, the antiquity of its institution in Egypt is fully established by the monuments, which make it evident that it was practised at a period very much earlier than the Exodus. It was, however, a primitive Arab custom, and its practise among the Jews may with equal probability be assigned to an Arab

source. Whatever its origin, the rite is confined to no single race. It was practised by the Aztecs and other peoples of Central America, and is still to be found among tribes on the Amazon, among the Australian tribes, the Papuans, the inhabitants of New Caledonia, and those of the New Hebrides. In Africa it is common among the Kaffirs and other tribes widely removed from Semitic influence. It is practised also by the Abyssinian Christians, and although not enjoined in the Koran has been adopted by the Mohammedans on the example of Mohammed himself. It was possibly in its origin a sacrifice to the deity presiding over generation, though in certain nations the rite has acquired a new symbolic significance according to the stage of their spiritual development.

Circumcision is also the name of a feast, celebrated on the 1st of January, in commemoration of the circumcision of our Saviour. It was anciently kept as a fast, in opposition to the pagan feast on that day in honor of Janus.

Circumnavigation (sir-kum-nav-i-gā'shun), a term signifying a sailing round the earth. Earliest tc succeed in this was Magellan, a Portuguese in the service of Spain, who headed the first expedition which succeeded in circumnavigating the globe, though he did not live to complete the voyage. He sailed with five ships from San Lucar September 20, 1519, passed the straits named after him in November, 1520, and was killed in the Philippine Islands in April, 1521, Juan Sebastian del Cano continuing the voyage and reaching San Lucar with the only remaining ship in September, 1522. The principal early navigators, after Magellan, who succeeded in making the voyage round the globe were Grijalva and Alvaradi (Spaniards), 1537; Mendana (Spanish), 1567; Drake (English), 1577-80; Cavendish, 1586-88; Le Maire (Dutch), 1615-17; Quiros (Spanish), 1625; Tasman (Dutch), 1642; Cowley, 1683; Dampier, 1689; Cooke, 1708; Clipperton, 1719; Roggewein (Dutch), 1721-23; Anson, 1740-44; Byron, 1764-66; Wallis, 1766-68; Carteret, 1766-69; Bougainville, 1766-69; Cooke, 1768-71; and Portlocke, 1788.

Circumnutation (-nu-tā'shun; lit. 'a nodding round about'), a name given by Darwin to the continuous motion of every growing part of every plant, in which it describes irregular elliptical or oval figures. The apex of the stem, for instance, after pointing in one direction, moves round till it points in the opposite direction, and so on continuously.

Circumstantial Evidence. See *Evidence.*

Circumvallation (vă-lā'shun), or LINE OF CIRCUMVALLATION, in military affairs, a line of field-works consisting of a rampart or parapet, with a trench surrounding a besieged place, or the camp of a besieging army.

Circus (sėr'kus), among the Romans, a nearly oblong building without a roof, in which public chariot-races and exhibitions of pugilism and wrestling, etc., took place. It was rectangular, except that one short side formed a half-circle; and on both sides, and on the semicircular end, were the seats of the spectators, rising gradually one above another, like steps. On the outside the circus was surrounded with colonnades, galleries, shops, and public places. The largest of these buildings in Rome was the *Circus Maximus*, capable, according to Pliny, of containing 260,000, and according to Aurelius Victor, 385,000 spectators. At present, however, but few vestiges of it remain, and the circus of Caracalla is in the best preservation. The games celebrated in these structures were known collectively by the name of *ludi circenses*, circensian games, or games of the circus, which under the emperors attained the greatest magnificence. The principal games of the circus were the *ludi Romani* or *magni* (Roman or Great Games), which were celebrated from the 4th to the 14th of September, in honor of the *great gods*, so called. The passion of the common or poorer class of people for these shows appears from the cry with which they addressed their rulers—*Panem et circenses!* (bread and the games!). The festival was opened by a splendid procession, or *pompa*, in which the magistrates, senate, priests, augurs, vestal virgins, and athletes took part, carrying with them the images of the great gods, the Sibylline books, and sometimes the spoils of war. On reaching the circus the procession went round once in a circle, the sacrifices were performed, the spectators took their places, and the games commenced. These were: 1. Races with horses and chariots, in which men of the highest rank engaged. 2. The gymnastic contests. 3. The Trojan games, prize contests on horseback, revived by Julius Cæsar. 4. The combats with wild beasts, in which beasts fought with beasts or with men (criminals or volunteers). 5. Representations of naval engagements (*naumachiæ*), for which purpose the circus could be laid under water. The expense of these games was

often immense. Pompey, in his second consulship, brought forward 500 lions at one combat of wild beasts, which, with eighteen elephants, were slain in five days. The modern *circus* is a place where horses are trained to perform, and where exhibitions of acrobats and various pageantries, and the tricks of clowns or buffoons, are presented. Menageries of wild beasts usually accompany the traveling circus.

Cirencester, or CICESTER (pron. colloquially sis'e-tėr or sis'es-tėr), a town of England, county and 18 miles S. E. of Gloucester; founded by the ancient Britons, and subsequently, under the name of Corinium, a Roman station. It has a well-known Royal Agricultural College. The trade is chiefly agricultural. It was a parliamentary borough till 1885, and now gives name to a parl. div. of the county. Pop. 7632.

Cirrhosis (si-rō'sis), a disease characterized by growth of fibrous tissue which gradually encroaches on and by compression destroys the true structure of the organ attacked. It is very frequent in the liver as a consequence of spirit-drinking; and hence the term 'drunkard's liver.'

Cirripedes (sir'i-pēdz), CIRRIPE'DIA, or CIRRHOP'ODA, a class of marine invertebrate animals, having a soft body provided with very long, articulated, tendril-like limbs (*cirri*), which are protruded and rapidly withdrawn within the multivalve shell. They are crustaceans which have undergone retrograde metamorphosis, being free-swimming in the larva form, but becoming after a time attached by the head. When adult they are affixed to some substance, either set directly upon it, as in the genus Balanus; or placed on a foot-stalk, as the barnacle; or sunk into the supporting substance, as the whale-barnacle. See *Balanus, Barnacle.*

Cirrus (sir'rus; in plural CIRRI), the tendril of a plant by means of which it climbs, usually a modified leaf or the prolongation of a midrib.

Cirrus. See *Cloud.*

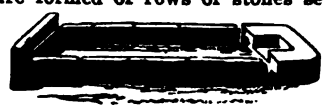
Cirta (sir'ta), the capital of the ancient Massylii in Numidia. After the defeat of Jugurtha it passed into the hands of the Romans, and was restored by Constantine, who gave it his own name. See *Constantine.*

Cisalpine (si-z-al'pin) REPUBLIC, a state set up in 1797 by Napoleon I in North Italy, recognized by Germany as an independent power at the Peace of Campo Formio. It comprised Austrian Lombardy, together with the Mantuan and the Venetian provinces, Bergamo, Brescia, Crema, Verona, and Rovigo, the duchy of Modena, the principality of Massa and Carrara, Bologna, Ferrara, and Romagna, and eventually its area was 16,337 square miles; its pop. 3,500,000. The legislative body held its sessions in Milan. On January 25, 1802, it received the name of the *Italian Republic;* from 1805 to 1814 it formed part of the kingdom of Italy.

Cisco (sis'ko), a city of Eastland Co., Texas, 90 miles S. W. of Fort Worth, in the heart of an oil territory. It has refineries, oil well supplies, planing mills, lumber yards, and manufactures of tools, gas and oil engines, nitroglycerine, etc. It has an abundant supply of natural gas. Pop. 7422.

Cispadane Republic (sis'pa-dān), a state on the south of the Po set up by Napoleon I, but speedily united with the Transpadane Republic to form the Cisalpine Republic.

Cist (sist), a place of interment of an early or prehistoric period, consisting of a rectangular stone chest or enclosure formed of rows of stones set up-



Cist, found near Driffield, Yorkshire.

right, and covered by similar flat stones. Such cists are found in barrows or mounds, enclosing bones. In rocky districts cists were sometimes hewn in the rock itself.

Cistaceæ (sis-tā-se-ē), a natural order of polypetalous exogens, consisting of low, shrubby plants or herbs with entire leaves and crumpled, generally ephemeral, showy flowers. Some exude a balsamic resin, such as ladanum, from a Levant species of Cistus. See *Cistus.*

Cistercians (sis-tėr'shanz), a religious order named from its original convent, Citeaux (*Cistercium*), not far from Dijon, in Eastern France, where the society was formed in 1098 by Robert, Abbot of Molesme, under the strictest observance of the rule of St. Benedict. The Cistercians led a severely ascetic and contemplative life, and having freed themselves from episcopal supervision, formed a kind of spiritual republic under a high council of twenty-five members, with the Abbot of Citeaux as president. Next to Citeaux the four chief monasteries were La Ferté, Pontigny, Clairvaux (founded by the celebrated St. Bernard in 1115) and Mori-

mond. In France they called themselves *Bernardines* in honor of St. Bernard. Among the fraternities emanating from them the most remarkable were the Barefooted monks, or Feuillants, and the nuns

Cistercian.

of Port Royal, in France; the Recollets, or reformed Cistercians; and the monks of La Trappe. There were a hundred Cistercian houses in England at the dissolution of monasteries. The general fate of religious orders during the French revolution reduced the Cistercians to a few convents in Spain, Poland, Austria, etc. There are still two or three houses in the British Isles. The Cistercians wear white robes with black scapularies.

Cistus (sis'tus), the rock-rose, a genus of plants of many species, order Cistaceæ, natives of Europe, or of the countries bordering the Mediterranean. Some of them are beautiful evergreen flowering shrubs, ornamental in gardens or shrubberies. Gum ladanum is obtained from *C. creticus* and *C. ladaniferus.*

Citadel (sit'a-del), a strong fortress in or near a city intended to keep the inhabitants in subjection, or to form a final point of defense in case of an attack of enemies.

Citation (sī-tā'shun), a summons or official notice given to a person to appear in a court as a party or witness in a cause.

Cîteaux (sē-tō), a village of Eastern France, dep. Côte-d'Or. See *Cistercians.*

Cithæron (si-thē'ron), the modern ELATE'A, a mountain of Greece, which, stretching N. W., separates Bœotia from Megaris and Attica. Its loftiest summit is 4620 feet in height. On its northern slope stood the city of Platæa.

Cithern, or CIT'TERN (sith'ern, sit'ern, Latin *cithara*, Greek *kithara*), an old instrument of the guitar kind, strung with wire instead of gut. Its eight strings were tuned to 4 notes, G, B, D, and E. It was frequently to be found in barbers' shops for the amusement of the waiting customers.

Cittern, in South Kensington Museum.

Cities of Refuge, six out of the forty-eight cities given to the tribe of Levi in the division of Canaan, set apart by the law of Moses as places of refuge for the manslayer or accidental homicide. Their names were Kedesh, Shechem, and Hebron on the west side of Jordan; and Bezer, Ramoth-Gilead, and Golan on the east.

Cities of the Plain. See *Sodom and Gomorrah.*

Citric (sit'rik) ACID ($C_6H_8O_7$), the acid of lemons, limes, and other citrous fruits. It is generally prepared from lemon-juice, and when pure is white, inodorous, and extremely sharp in its taste. In combination with metals it forms crystalline salts known as citrates. The acid is used as a discharge in calico printing and as a substitute for lemon in making beverages.

Citron (sit'ron), *Citrus mēdica*, a small evergreen shrub yielding a fruit which is candied with sugar. The rind is considered superior to the pulp; it is imported in a preserved state, and is used in confectionery. The juice is less acid than that of the lemon. See *Citrus.*

Citronella (sit'ron-el-a), OIL, an oil obtained from a kind of grass (*Andropōgon nardus*), cultivated at Singapore and in Ceylon. It is used for scenting soap and driving away mosquitoes.

Citrullus (sit-rul'us). See *Colocynth.*

Citrus (sit'rus), an important genus of trees, nat. order Aurantiaceæ, or that of the orange, characterized by simple ovate acuminate leaves or leaflets united by a distinct joint to the leaf-like stalk; by having the stamens united by their filaments into several irregular bundles, and by yielding a pulpy fruit with a spongy rind.—*Citrus mēdica*

is the citron. Other species are the lemon (*Citrus limônum*), the sweet orange (*Citrus aurantium*), the bitter orange (*Citrus vulgâris*), the shaddock (*Citrus decumâna*), and the forbidden fruit (*Citrus paradîsi*), sometimes used as an ornamental addition to dessert. The genus *Citrus* furnishes the essential oils of orange and lemon peels, of orange flowers, of citron peel, of bergamot, and oil of orange leaves—all much esteemed in perfumery. See *Lemon*, *Orange*, etc.

Cittadella (chĕt-tä-dä'la), an old town of North Italy, province of Padua, surrounded by walls. Pop. 3627.

Cittá-di-Castello (-dē kàs'tel-ō), a town of Italy, province of Perugia, on the Tiber, the seat of a bishop, with a cathedral containing valuable paintings. Pop. 6096.

Città-Vecchia (-vek'i-à, 'old city'), a fortified town of Malta, near the center and almost on the highest point of the island, 7 miles w. s. w. Valetta. The rise of the latter town has almost ruined it, and its magnificent houses and palaces are almost deserted. It has a large cathedral and interesting catacombs. The ancient palace of the Grand Masters of the Order of Malta also remains. Pop. (1901) 7515.

Cit'tern. See *Cithern.*

City (sit'i; Latin, *civitas*) in a general sense, a town holding, from extent of population, favorable situation, or other causes, a leading place in the community in which it is situated. Popularly, also, it is used to designate the old and central nucleus as distinguished from the suburban growths of large towns. The ecclesiastical sense of the term city is a town which is, or has been, the see of a bishop. This seems to be the historical use of the term in England, and still possesses some authority there, but to a considerable extent it has been superseded by the wider one. In America the application of the term is dependent upon the nature and extent of the municipal privileges possessed by corporations, and a town is raised to the dignity of a city by special charter. Generally the term implies the existence of a mayor at the head of the municipality.

Ciudad (thi-ō-*dȧd'*), the Spanish word for city, appearing in many names of Spanish places.

Ciudad Bolivar (thi-ō-*dȧd'* bo-lē'vär). See *Angostura.*

Ciudadela (thi-ō-*dȧ-dä'lȧ*), a walled city and seaport, Spain, on the west side of the island of Minorca. Chief industries: weaving woolen fabrics, expressing oil and wine, and husbandry. Pop. 8645.

Ciudad-Real (thi-ō-*dȧd*-rā-ȧl', 'royal town'), a town of Spain, capital of the province of same name, on a low plain near the Guadiana, 100 miles south of Madrid. The principal edifice is the Church of Santa Maria, a magnificent structure, though consisting only of a single nave. Pop. 15,327.—The province occupies the south extremity of New Castile, between the parallel ranges of the Sierra Toledo and Sierra Morena; area, 7840 square miles. Pop. 321,580.

Ciudad-Rodrigo (thi-ō-*dȧd*-rod-rē'gō, 'Rodericktown'), a fortress in Spain, in Leon, on the river Aguada, was a place of considerable importance in early Spanish history as a fortress on the Portuguese frontier, and was of some importance in the Peninsular war, being taken by storm by the British under Wellington, after a siege of eleven days. The Cortes gave Wellington the title of Duke of Ciudad-Rodrigo. Pop. 8930.

Cive (sīv). See *Chive.*

Civet (siv'et; *Viverra*), a genus of carnivorous mammals found in N. Africa, and in Asia from Arabia to Malabar and Java, and distinguished by having a secretory apparatus in which collects the odoriferous fatty substance known as *civet*. The animal, which in form is intermediate between the weasel and the fox, and from 2 to 3 feet long by 10 inches high, is of a cinereous color, tinged with yellow and marked by dusky spots disposed in rows. They are nocturnal, and prey upon birds and small animals, and may be considered as forming the transition from the musteline or marten kind to the feline race. The genus has been divided into two subgenera—the true *civets*, having the pouch large and well marked; and the *genets*, in which there is a simple depression instead of a pouch. Two species of the first and eight of the second are at present known, the chief scent-yielding species being the common civet (*Viverra civetta*) of N. Africa and the zibeth (*V. zibetha*) of Asia. The pouch is situated between the anus and the genitals, and the odorous matter obtained from it is, when good, of a clear yellowish or brown color. The smell is powerful and very offensive, but when diluted with oil or other materials is an agreeable perfume. The American variety of the civet (civet cat) is easily tamed.

Civic Crown (siv'ik), among the Romans, the highest military reward, assigned to him who had preserved the life of a citizen. It bore the inscription '*Ob civem servatum*,' that is, 'for saving a citizen,' and was made of oak leaves. The person who received the crown wore it in the theater, and sat next the senators, and when he came in all the assembly rose up as a mark of respect.

Civics (civ'iks), the science that treats of citizenship and the relations between citizens and the government. It embraces ethics, or social duties; civil law, or governmental methods; economics, or the principles of finance and exchange; and the history of municipal development.

Cividale (chē-vē-dä'lā), a walled town, Italy, Venetia, 8 miles E. N. E. of Udine. It has a large cathedral dating from the eighth century. Pop. 4174.

Civil Death. See *Death, Civil.*

Civilization (s i v-i l-i z-ā'shun), the sum at any given time of the attainments and tendencies by which the human race or any section of it is removed from the savage state. The history of progress in civilization is usually presented from one of two points of view—the first conceiving the race as starting from a high civilization, to which in point of intellectual and moral power it has yet to return; the second viewing the civilization of any period as the result of a constant and increasingly-successful stream of effort upwards from an origin comparable with the condition of the lower animals. The latter is the prevailing scientific theory, which finds the secret of progress in the interaction of function and environment. According to it, primitive man, at first feeding on wild fruits and berries, and sheltering himself under overhanging rocks or caves, entered upon the stone age, in which, as the contemporary of the mammoth and cave-bear, he made himself sharp-edged tools by chipping the flakes of flint found in the drift under gravel and clay. In the newer stone age he learned the art of polishing these rough implements, with which he cut down trees to make canoes, killed wild animals for food, and broke their bones for marrow, or shaped them into weapons. Fire he turned to account to hollow out trees, to cook his food, to fashion clay ware. Artificial means of shelter were constructed by piling rude huts of stones, by digging holes in the ground, or by driving piles into the beds of lakes and raising dwellings on them. The artistic instincts found expression in drawings of animals scratched upon bone or slate. The discovery of metals constituted a great step in advance. Gold and copper came early into use, and bronze was soon discovered, though a long time passed before iron was smelted and substituted for bronze where hardness was required. Gradually the roving savage became a nomadic shepherd and herdsman, or a tiller of the soil, according to his environment. The practice of barter was in part superseded by the beginnings of some sort of currency. Gesture language gave place in part to an enlarged vocabulary, and picture-writing to the use of phonetic signs. In the meantime man had begun to question himself and the world on profounder issues, entering upon the myth-making age, in which was projected outwards on the chief phenomena of nature some shadow of his own personality. The worship of the sun, moon, and stars, a faith in a future life, the worship of dead ancestors, fetishes, animals, etc., the belief in magic and witchcraft, all sprang into being. Prayer came spontaneously to him; the idea of propitiation by sacrifice would arise from his dealings with his fellows and his foes; the sacred books began to shape themselves. Tribal and national relations, arising from ties of family and exigencies of defense, were cemented by unity of faith, and the higher social unit began to perfect itself under the rule of the patriarch, the bravest warrior, etc. With varying needs, arising from diversity of environment, distinctions of nationality became more and more emphatic, and the history of civilization becomes the history of the nation viewed from the standpoint of moral, political, scientific, mechanical, and general intellectual progress.

City Planning, a system now being widely adopted in the United States for the betterment and adornment of cities, definite plans being adopted in advance, to be worked up to, so that the development of the cities may be in definite lines. Comprehensive plans of this kind have been made in many cities and in some instances much has been done in carrying them out. An exhibition of such plans was made in the City Hall, Philadelphia in the spring of 1911, and showed that highly encouraging progress was being made, not only in that city, but in many other communities.

Civil Law (*jus civile*), among the Romans the term nearly corresponding to what in modern times is implied by the phrase *positive law*, that is, the rules of right established by any government. They contradistinguished it

from natural law (*jus naturāle*), by which they meant a certain natural order followed by all living beings; also from the general laws of mankind established by the agreement of all nations and governments (*jus gentium*). With the growth and multiplication of the edicts issued by the prætors (in whose hands was the supreme administration of justice) for the modification and extension of the positive enactments, a further distinction became necessary, the whole body of this prætorian law being known by the name of *jus honorarium* as opposed to the strict formal law (*jus civile*). The latter, however, included both the private law (*jus privātum*), which relates to the various legal relations of the different members of the state—the citizens—and the public law (*jus publicum*), that is, the rules respecting the limits, rights obligations, etc., of the public authorities. The final digest of Roman law was made in the sixth century A.D. under the Emperor Justinian, but at first was only admitted as formally binding in a small part of Italy. After the eleventh century, in Upper Italy, particularly in the school of Bologna, the body of the Roman law, put together by Justinian, was formed by degrees into a system applicable to the wants of all nations; and on this model the ecclesiastical and papal decrees were arranged, and to a considerable degree the native laws of the new Teutonic states. From all these the Roman law was distinguished under the name of *civil law*. In this sense, therefore, *civil law* means *ancient Roman law;* and it is contradistinguished from *canon law* and *feudal law*, though the feudal codes of the Lombards have been received into the *corpus juris civilis*, or body of civil law. As the Roman code exerted the greatest influence on the private law of modern Europe, the expression *civil law* is used also to embrace all the rules relating to the private rights of citizens. Under the term *civil law*, therefore, in America and Europe, is to be understood not only the Roman law, but also the modern private law of the various countries; for example, in Germany, *Das gemeine Deutsche Privatrecht;* in France the *Code civil des Français* or *Code Napoléon*. In this sense it is chiefly opposed to *criminal law*, particularly in reference to the administration of justice, which is to be divided into *civil justice* and *criminal justice*.

Civil List, in Britain, formerly the whole expenses of the government, with the exception of those of the army, navy, and other military departments. It is now limited to the expenses proper to the maintenance of the household of the sovereign. It was once a principle in England, as in other Teutonic nations, that the monarch was to pay all the expenses of government, even including those of the army, from the possessions of the crown, and until the Restoration the whole expense of the government continued to be defrayed out of the royal revenue. In the reign of William, the Commons adopted the principle of separating the regular and domestic expenses of the king from the public expenditure, and establishing a systematic and periodical control over the latter. The amount voted to the king for life in 1697 was $3,500,000 annually and the same vote was made at the commencement of the reign of Queen Anne and George I. By the beginning of the reign of George II the revenue appropriated to the civil list was found to have produced $150,000, and this sum was voted on the accession of George II. Besides the regular vote, grants had been frequently made to defray debts incurred in the expenditure of the sovereign. On the accession of George III the civil list was fixed at $4,000,000, but instead of being paid out of appropriated revenues in which the crown lands were included, these were surrendered, and it was charged on the ordinary taxation. Large extra grants had to be made during this reign. In the reign of William IV the list was cleared of all salaries, etc., upon it, and placed at $2,550,000, including a pension list of $375,000. Other variations in the amount were made on the accessions of Victoria, Edward VII and George V. Many continental states have a fixed civil list; that of Russia is $7,050,000; of Turkey, $4,600,000; of Austria, $3,650,000; of Prussia, $3,375,000, to which an additional grant of $1,125,000 has recently been added, making a total of $4,500,000.

Civil Service, collectively, all offices under government except those directly connected with the army and navy. Formerly appointments to the civil service in Great Britain were entirely in the gift of the executive government, and were obtained by influence, while the bestowal of them was used as a means of gaining parliamentary support on behalf of the government, but in 1855 a system of examinations was instituted to test the efficiency of candidates, and in 1870, it was directed that appointments in the civil service should (with certain exceptions) be filled by open competition.—In the United States civil service a system was inaugurated by President Jackson by which the party in

power conferred the various appointments on such of its members as had most influence, or had done it most service, there being thus usually a great change of officials with each change of president, on the understood principle that 'to the victors belong the spoils.' After 1870 attempts at establishing a better state of affairs were made, and in 1883 a bill introducing a system of civil service reform was passed by congress. The act creates a commission, composed of three members appointed by the president and senate, known as the Civil Service Commission. They were to provide rules for open competitive examinations for testing the fitness of applicants for the public service. Under the administration of Cleveland and those of the succeeding presidents the competitive system was greatly extended and it now embraces most of the departments of the government.

Civil War. See *United States.*

Clackmannan (klak-man'an), the smallest county of Scotland, containing little more than 47 square miles, situate on the north side of the Forth, by which it is bounded S. W., while on nearly all the other sides it is inclosed by the countries of Perth and Stirling. The north part of the county is occupied by the Ochil Hills, which are largely given up to sheep-farming, but the other portions are comparatively level and exceedingly fertile, yielding large crops of wheat and beans. The minerals are valuable, especially coal, which abounds. There are also some extensive ironworks, and some large breweries and distilleries; woolens are also manufactured, and tanning, glass-blowing, etc., carried on. The principal towns are Alloa, Tillicoultry, Dollar, and Clackmannan, the county town. Pop. 32,029.

Cladium (klā'di-um), a genus of plants, consisting of twenty-one species of wide distribution, nat. order Cyperaceæ (or sedges). The *C. Mariscus*, or twig-rush, is a British perennial with kelled leaves, having a sharp point and prickly serratures. It is very common in certain fenny districts in Cambridgeshire, etc., and is used for thatching.

Clairac (klā-rȧk), a town of France, department Lot-et-Garonne, on the Lot. It was the first town in the south of France to declare in favor of the Reformation. Pop. about 3000.

Clairaut (klā-rō), Alexis Claude, mathematician, born at Paris in 1713. In his eleventh year he composed a treatise on the four curves of the third order, which, with his subsequent *Recherches sur les Courbes à double Courbure*, 1731, procured him a seat in the academy at the age of eighteen. He accompanied Maupertuis to Lapland, to assist in measuring an arc of the meridian, and obtained the materials for his work *Sur la Figure de la Terre*. In 1752 he published his *Théorie de la Lune*, and in 1759 calculated the perihelion of Halley's comet. He died in 1765.

Claire (klār), St., or Santa Clara, Order of, founded in 1212 by a lady of this name, of noble birth, born at Spoleto, Italy, in 1193; died in 1253, and canonized in 1255. It has numerous convents in Europe and America.

Clairton (klār'tun), a city, county seat of Clearfield Co., Pennsylvania, on Susquehanna River, 35 miles N. of Altoona, in a rich farming district. There are various manufactures. Pop. 6264.

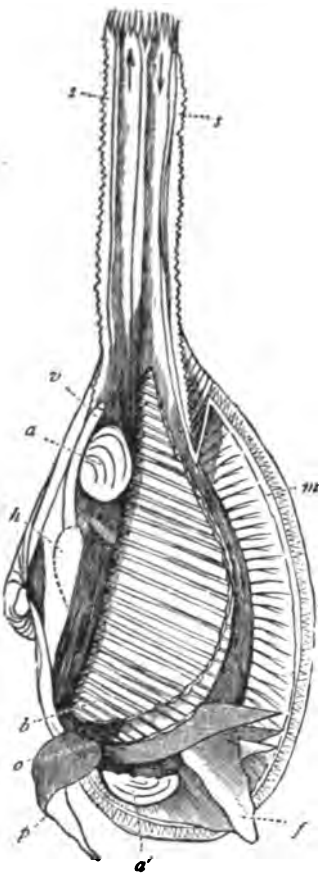
Clairvaux (klār-vō), a village of France, department of Aube, celebrated for its magnificent abbey, founded in 1114 or 1115, by St. Bernard, but suppressed at the revolution. The existing buildings have been converted into an immense house of correction. See *Cistercians.*

Clairvoyance (klār-voi'ans; that is 'clear-seeing'), an alleged faculty by which certain persons in certain states, or under certain conditions, are said to be able to see things by some sort of mental or spiritual vision apart altogether from the sense of sight.

Clam, the common name for the bivalves of the genus *Chama*, and some other allied genera. In the eastern United States the clams of market are of two kinds; the hard or round clam (*Venus mercenaria*) and the soft clam (*Mya arenaria*). The former are known in New England by the Indian name 'quohog'; they live on sandy bottoms, and are obtained by raking or dredging. The 'little necks' are young clams of this sort. The soft clam is the Mya—the species used on the American Atlantic coast being *M. arenaria*, while that of Europe is *M. truncata*. It has thin, elongated, white shells, is found deeply buried in mud or sand near shore, and obtained by digging. The largest bivalve mollusc known is the giant clam (*Tridacna*) of the South Pacific region, whose valves may measure two feet across and weigh 500 pounds.

Clamecy (klȧm-sē), a town of France, department Nièvre, on the Yonne. It has a fine church, founded in

1497. Wood-rafts for the supply of Paris with firewood are made up here, and floated down the Yonne and Seine. Pop. 5313.



Clam.

Anatomy of a Bivalve Mollusc, *Mya arenaria* (after Woodward). The left valve and mantle-lobe, and half the siphons are removed. *s s*, Respiratory siphons, the arrows indicating the direction of the currents; *a a'*, Adductor muscles; *b*, Gills; *h*, Heart; *o*, Mouth, surrounded by (*p*) labial palpi; *f*, Foot; *r*, Anus; *m*, Cut-edge of the mantle.

Clan (Gaelic, a tribe or family), among the Highlanders of Scotland, consisted of the common descendants of the same progenitor, under the patriarchal control of a chief, who represented the common ancestor. The name of the clan was frequently formed of that of the original progenitor with affix *mac* (son); thus the MacDonalds were the sons of Donald, and every individual of this name was considered a descendant of the clan, and a brother of every one of its members. The chief exercised his authority by right of primogeniture, as the father of his clan; the clansmen revered and served the chief with the blind devotion of children. The clans each occupied a certain portion of the country, and hostilities with neighboring clans were extremely common. Next in rank to the chief were a certain number of persons, commonly near relations of the chief, to whom portions of land were assigned during pleasure or on short leases. Each of these usually had a subdivision of the clan under him, of which he was chieftain, subject, however, to the general head of the sept. The jurisdiction of the chiefs was not very accurately defined, and it was necessary to consult, in some measure, the opinions of the most influential clansmen and the general wishes of the whole body. It was latterly the policy of the government in Scotland to oblige the clans to find a representative of rank to become security at court for their good behavior; the clans who could not procure a suitable representative, or who were unwilling to do so, were called broken clans, and existed in a sort of outlawry. The most notable instance of a proscribed and persecuted clan was that of the ancient clan MacGregor, who long continued to hold their lands by the *coir a glaive*, or right of the sword. The rebellions of 1715 and 1745 induced the British government to break up the connection which subsisted between the chiefs and the clansmen. The hereditary jurisdiction of the chiefs was therefore abolished, the people disarmed, and even compelled to relinquish their national dress. Few traces of this institution now remain, except such as have a merely sentimental character; thus all those who possess the same clan name may still talk of their 'chief,' though the latter have now neither land nor influence.

Clapham (clap'am), a southern suburban district and parl. borough of London. Clapham Common is a fine open space of over 200 acres. Pop. 58,596.

Clap-net, a ground-net used by bird-catchers, consisting of two equal parts about 12 yards long by 2½ wide, and each having a slight frame. They are placed about four yards apart, and are pulled over by a string so as to inclose any birds on the intervening space.

Clapperton (clap'er-tun), HUGH, an African traveler, born in Annan, Dumfriesshire, in 1788. He entered the merchant service, but was impressed into the navy, in which he became a lieutenant in 1816. He then accompanied Dr. Oudney and Lieutenant Denham to Africa, where he remained till 1825, returning with valuable information, although the disputed question of the course of the Niger was left undecided. On his return to England Clapperton received the rank of captain, and immediately engaged in a second expedition, to start from the Bight of Benin. Leaving Badagry, Dec., 1825, he penetrated to Katunga, within thirty miles of the Quorra or Niger, but was not permitted to visit it. At Soccatoo the Sultan Bello refused to allow him to proceed to Bornu, and detained him a long time in his capital. The disappointment preyed upon him, and he died, April, 1827, at Chungary, a village near Soccatoo. He was the first European who traversed the whole of Central Africa from the Bight of Benin to the Mediterranean.

Claqueurs (klȧ-kėrz), the name given in Paris to a company of persons paid for applauding theatrical performances, more especially on the production of any new piece. They were sometimes called *chevaliers-du-lustre*, from mustering in great force near the center of the pit, below the chandelier.

Clara, SANTA. See *Claire.*

Clare (klăr), a maritime county of Ireland, province Munster, between Galway Bay and the Shannon estuary; area, 827,994 acres, of which 140,000 are under tillage. The surface is irregular, rising in many places into mountains of considerable elevation, particularly in the E., W., and N. W. district. Oats, potatoes, wheat, and barley are the principal crops. The chief minerals are limestone, lead, and slate, but the produce of the county is almost wholly agricultural. Lakes are numerous, but generally of small size, and the county is deficient in wood. The salmon-fisheries are valuable, and there are immense oyster-beds in some places. Capital, Ennis. It has lost largely in population through the miserable condition of the peasantry. Pop. in 1841, 286,394; in 1901, 112,109.

Clare, JOHN, 'the Northamptonshire peasant poet,' born in 1793 at Helpstone, near Peterborough, where his father was a farm-laborer. He led a rambling, unsteady life until 1818, when he was obliged to accept parish relief. In 1820 his *Poems Descriptive of Rural Life and Scenery* met with a favorable reception, and the issue of his *Village Minstrel* in 1821 won him many friends. A subscription furnishing him with $225 annually was, however, dissipated by 1823, and his *Shepherd's Calendar* (1827), which he hawked himself, was not a success. He brought out a new work, the *Rural Muse*, in 1835, but became insane shortly afterwards, the remainder of his life, from 1837 to 1864, being passed in the Northampton Lunatic Asylum. Clare was a genuine poet, and his pictures of rural life are eminently truthful and pleasing.

Clare Island, an island of Ireland, County Mayo. It has a lofty lighthouse.

Claremont, (klar'e-mont), a town of New Hampshire, 50 miles W. N. W. of Concord, on the Sugar River, the falls of which supply large water-power, and feed to extensive manufactures of cotton, woolen, paper, machinery, etc. Pop. (1920) 9524.

Clarence (klar'ens), GEORGE, DUKE OF, son of Richard, Duke of York, and brother of Edward IV, King of England. On his brother's accession, in 1461, he was created Duke of Clarence, and in 1462 lord-lieutenant of Ireland, but afterwards joined the disaffected Warwick, and married his daughter. On the eve of battle he rejoined his brother, and was afterwards involved in a quarrel with his brother Richard, who had married Warwick's younger daughter, about the inheritance of their father-in-law. On the death of his wife Clarence sought the hand of Mary of Burgundy, but Edward interposed and a serious breach ensued. A gentleman of the household of Clarence having at this time been condemned for using necromancy against the king, Clarence interfered with the execution of the sentence. He was impeached by the king in person, condemned in 1478, and secretly made away with in the Tower. The tradition that he was drowned in a butt of malmsey wine is unsupported by evidence.

Clarendon (klar'en-dun), CONSTITUTIONS OF, a code of laws adopted in the tenth year of Henry II (January, 1164), at a council of prelates and barons held at the village of Clarendon, Wiltshire. These laws, which were finally digested into sixteen articles, were brought forward by the king as 'the ancient customs of the realm,' and were enacted as such by the council, but they really involved a great scheme of administrative reform in the assertion of the supremacy of the state over clergy and laity alike. The power of the eccles-

astical courts was restricted, the crown secured the right of interference in elections to ecclesiastical offices, appeals to Rome were made dependent on the king's leave, ecclesiastical dignitaries were deprived of their freedom to leave the country without the royal permission, etc. Becket signed them, but retracted his signature on the refusal of the Pope Alexander III to countenance them. Becket's murder followed, and to effect a reconciliation with the pope Henry promised the amendment of the Constitutions of Clarendon. They were accordingly modified in 1176 at Northampton in favor of the church, but they are not less to be regarded as containing the germ of the ecclesiastical policy of Henry II.

Clar'endon, EDWARD HYDE, EARL OF, Lord High-chancellor of England, son of a private gentleman of Dinton, Wilts, where he was born in 1608. After studying at Oxford and at the Middle Temple he married, in 1629, the daughter of Sir George Ayliffe, and, in 1632, Frances, daughter of Sir Thomas Aylesbury. He commenced his political career in 1640 as member for Wootton-Basset, and was again returned to the Long Parliament (November, 1640) by the borough of Saltash, at first acting with the more moderate of the popular party, but gradually separating himself from the democratic movement until, by the autumn of 1641, he was recognized as the real leader of the king's party in the house. Upon the breaking out of the civil war he joined the king at York, was knighted, made privy-councilor, and appointed chancellor of the exchequer. After vainly attempting to bring about a reconciliation between the contending parties he accompanied Prince Charles to Jersey, where he began his *History of the Rebellion*, and wrote answers in the king's name to the manifestoes of the parliament. In September, 1649, he rejoined Charles at The Hague, and was sent by him on an embassy to Madrid. Soon after his return he resumed the business of the exiled court, first at Paris, and afterwards at The Hague, where, in 1657, Charles II appointed him lord-chancellor. After Cromwell's death he contributed more than any other man to promote the Restoration, when he was placed at the head of the English administration. In 1660 he was elected chancellor of the University of Oxford, and in 1661 was created Baron Hyde, Viscount Cornbury, and Earl of Clarendon. The marriage of the Duke of York with his daughter, Anne Hyde, confirmed for a time his power, but in 1663 Lord Bristol made an unsuccessful attempt to impeach him, his influence with the king declined, and his station as prime-minister made the nation regard him as answerable for the ill success of the war against Holland, the sale of Dunkirk, etc. The king's displeasure deepened when his plan of repudiating his wife and marrying the beautiful Lady Stuart was defeated by Clarendon, who effected a marriage between this lady and the Duke of Richmond. The king deprived him of his offices, an impeachment for high treason was commenced against him, and he was compelled to seek refuge in Calais. He lived six years at Montpellier, Moulins, and Rouen, where he died in 1674. His remains were afterwards removed to Westminster Abbey. During his second exile he completed his *History of the Rebellion* in autobiographical form, wrote a biographical *Continuation* in defense of his administration, and sought to vindicate Lord Ormonde by a *History of the Rebellion in Ireland.*

Clarendon, GEORGE WILLIAM FREDERICK VILLIERS, EARL OF, eldest son of the Hon. George Villiers. He was educated at Cambridge, entered the civil service at an early age, and in 1820 was attached to the embassy at St. Petersburg. In 1834, as minister to Madrid, he aided in negotiating the Quadruple Alliance. He succeeded to his uncle's title in 1838 and in 1840, was appointed lord privy-seal, and in October chancellor of the duchy of Lancaster. He supported the repeal of the corn-laws and the reduction of duties, and in 1846 was appointed president of the board of trade in Lord J. Russell's ministry, and in the following year lord-lieutenant of Ireland. He resigned with his party in 1852, when the Earl of Derby took office, but soon after the formation of the Aberdeen ministry he was appointed to the foreign secretaryship, which he held until Jan., 1855. After a few weeks' interval he returned to the post under Lord Palmerston, and retained it until 1858, being one of the signatories of the Treaty of Paris. In 1861 Clarendon was sent as ambassador-extraordinary to the coronation of the King of Prussia, and in 1864 was again appointed chancellor of the duchy of Lancaster. In the following administration, under Russell, he resumed the direction of the foreign office. He was sent in 1868 on a special mission to the pope and the King of Italy, and again occupied the post of foreign secretary in the Gladstone ministry till his death, in June, 1870.

Clarendon Press, the press of the University of Ox-

ford, established in 1586. Here all the printing for that university is done.

Claret (klar'et), the name given in Britain, America, etc., to the red wines of Bordeaux. A large quantity of wine produced in California is also called by this name, and is of a very excellent quality. The name has become generic. See *Bordelais Wines.*

Clarichord (klar'i-kord), or CLAV'I-CHORD, an old keyed instrument, somewhat in the form of a spinet. Sometimes called the *dumb spinet.*

Clarification (klar-i-fi-kā'shun), or the separation of the insoluble particles that prevent a liquor from being transparent, may be performed by *depuration*, in which the liquor is allowed to stand until the particles are precipitated, and then decanted; by *filtration*, or straining through wood, sand, charcoal, etc.; or by *coagulation*, in which the albumen contained in or added to the liquid is solidified and precipitated, the extraneous substances being precipitated with it. Now commonly effected by centrifugal machines. See also *Fining.*

Clarinet (klar'i-net) or CLARIONET, a wind-instrument of the reed kind, played by holes and keys. Its lowest note is E below the F clef, from which it is capable, in the hands of good performers, of ascending more than three octaves. The keys of C and F, however, are those in which it is heard to most advantage, though there are B flat, A, D, B, and G clarinets.

Clarion (klar'i-un), a musical instrument of the trumpet kind, with a narrower tube and a higher and shriller tone than the common trumpet.

Clark, ALVAN, born in Ashfield, Massachusetts, in 1808; died 1887. He gained distinction as a skilful maker of telescopes and achromatic object-glasses. —His son, ALVAN GRAHAM CLARK (1832-1897), succeeded him in business and completed the Lick 36-inch refracting telescope in 1886 and the Yerkes 40-inch in 1897. He made many discoveries in double stars.

Clark, CHAMP (1850-1921), an American Congressman, born in Anderson Co., Kentucky. He was president of Marshall College, West Virginia, 1873-74, and later engaged in law practice in Missouri. He was elected to Congress from Missouri in 1893, 1897, and from 1897 served continuously. He led in the Baltimore Democratic national convention of 1912 for the presidential nomination on 29 ballots. He was chosen Speaker of the House in 1911.

Clark, CHARLES HEBER, an American humorist, born at Berlin, Md., July 11, 1841. Under the pen-name of MAX ADELER he was the author of several amusing books. His works include *Out of the Hurly Burly, Captain Bluitt, In Happy Hollow, The Quakeress, etc.* He died in August, 1915.

Clark, GEORGE ROGERS, born in Virginia in 1752, settled in 1776 in Kentucky, where he soon became a leader among the settlers. In December, 1777, he secured approval of a plan to conquer the British posts in the Northwest. In 1778 he invaded the Illinois country, and completed the conquest in 1779. As a result England gave up the Northwest Territory by the treaty of 1783. Died in 1818.

Clark, WILLIAM. See *Lewis and Clark.*

Clark University, an educational institution at Worcester, Massachusetts, chartered in 1887, and devoted exclusively to post-graduate work in the sciences. It was founded by Jonas G. Clark. There is an institution of the same name at Atlanta, Georgia, founded in 1870, and confined to colored students.

Clarke, CHARLES COWDEN, an English writer, born at Enfield, Middlesex, in 1787. He was one of the minor members of the Shelley, Keats, and Leigh Hunt group. His publications include his *Hundred Wonders* (1814), *Adam the Gardener* (1834), *Shakespere Characters* (1863), and *Molière Characters* (1865). He is best known, however, by the edition of Shakespeare, which he annotated in conjunction with his wife, and by the *Shakespere Key* (1879). He died in 1877.

Clarke, EDWARD DANIEL, an English traveler and mineralogist, born in Sussex in 1769, entered Jesus College, Cambridge, in 1786; and was made a fellow in 1798. In 1799 he set out on an extensive tour through Europe, Asia Minor, Syria, Egypt, etc., securing for English institutions many valuable objects, such as the celebrated manuscript of Plato's works, with nearly 100 others, a colossal statue of the Greek goddess Demeter (Ceres), and the famous sarcophagus of Alexander the Great. In 1807 he commenced a course of lectures on mineralogy at Cambridge, and in 1808 a professorship of mineralogy was instituted there in his favor. He died in 1822. A complete edition of his works appeared in 1819-24, under the title of *Travels in Various Countries of Europe, Asia, and Africa.*

Clarke, SAMUEL, an English theological and philosophical writer, born in 1675 at Norwich, where his father was an alderman; educated at Caius College, Cambridge. He became chaplain to Dr. More, bishop of Norwich, and between 1699 and 1701 published *Essays on Baptism, Confirmation, and Repentance*, replied to Toland's *Amyntor*, and issued a paraphrase of the Gospels. He was then presented with two livings, and in 1704 and 1705 twice delivered the Boyle lectures at Oxford on *The Being and Attributes of God*, and on *The Evidences of Natural and Revealed Religion*. In 1706 he published a letter to Mr. Dodwell on the *Immortality of the Soul*, and a Latin version of Newton's *Optics*. He was then appointed rector of St. Bennet's, London, and shortly afterwards rector of St. James' and chaplain to Queen Anne. In 1712 he edited *Cæsar's Commentaries*, and published his *Scripture Doctrine of the Trinity*, which became a subject of much controversy and of complaint in the Lower House of Convocation. His chief subsequent productions were his discussions with Leibnitz and Collins on the *Freedom of the Will*, his Latin version of part of the *Iliad*, and a considerable number of sermons. He died in 1729. His *Exposition of the Catechism* appeared after his death.

Clarksburg, a city, county seat of Harrison Co., West Virginia, on the Monongahela River. It is the center of one of the greatest gas fields east of the Mississippi, and there is coal and glass sand in abundance. It has glass factories (3000 operatives), spelter and carbon plants, machine shops, foundries, tool works, casket factory, etc. Here 'Stonewall' Jackson was born. Pop. (1910) 9201; (1920) 27,869.

Clarksdale, a city, county seat of Coahoma Co., Mississippi, 76 miles S. of Memphis, on Yazoo & Mississippi Valley R. R. Has cottonseed-oil mills, etc. Pop. (1920) 7552.

Clarkson (klark'son), THOMAS, an English emancipationist, born in 1760 at Wisbeach, Cambridgeshire. He was originally intended for the church, and studied at St. John's College, Cambridge, where he gained the vice-chancellor's prize for a Latin essay on the theme, '*Anne liceat invitos in servitutem dare?*' (Is it lawful to make slaves of men against their will?) His researches for this dissertation roused in him a passionate antagonism to the slave trade, and he allied himself with the Quakers and with Wilberforce. While the latter advocated the cause in parliament, Clarkson conducted the agitation throughout England, even crossing to France to obtain the coöperation of the National Convention. His labors went far to secure the prohibition of the slave trade in 1807 and the emancipation act of 1833. His death took place in 1846. His literary works comprise: *A Portraiture of Quakerism* (1806); *History of the Abolition of the Slave Trade* (1808).

Clarksville (klarks'vil), a city of Tennessee, county seat of Montgomery Co., on the Cumberland River, 65 miles below Nashville. Here is the Southwestern (Presbyterian) University. The city is largely engaged in the tobacco trade and has manufactures of farm implements, flour, lumber, iron products, etc. Pop. (1920) 8110.

Clark University, an institution for higher learning at Worcester, Massachusetts, founded in 1887 by Jonas Gilman Clark. Affiliated with it, but under a separate endowment, is Clark College.

Classic (klas'ik), a term derived from L. *classici*, the name given to the citizens belonging to the first or highest of the six classes into which the Romans were divided. Hence the Greek and Roman authors have been in modern times called *classics*, that is, the excellent, the models. The Germans, however, soon gave the word *klassisch* (classical) a wider sense, making it embrace: 1, the standard works of any nation; and 2, ancient literature and art, in contradistinction to the modern; and their example was followed by other nations. A third use of the term, in contradistinction to romantic, is scarcely comprised under those cited, implying adherence to the established literary or artistic convention of some previous period, as opposed to the insurgence of new elements shaping a new convention. In this sense classic usually implies the predominance of form over emotion and thought, while its antonym romantic implies the predominance of emotion and the departure from the old formal standards. From its vagueness in this regard many writers, such as G. H. Lewes, have vainly proposed to dispense with the term.

Classification (klas'i-fi-kā'shun), is commonly defined as the arrangement of things, or of our notions of them, according to their resemblances or identities; and its general object is to provide that things shall be thought of in such groups, and the groups in such an order, as will best promote the remembrance and ascertainment of their laws. As any collection of objects may be classified in a variety of ways,

no fixed method can be laid down; but it will be obvious that in correct classification the definition of any group must hold exactly true of all the members of that group and not of the members of any other group. The best classification again will be that which shall enable the greatest possible number of general assertions to be made; a criterion which distinguishes between a natural and an artificial system of classification. Classification is perhaps of most importance in natural history—for example, botany and zoology. In the former the artificial or Linnæan system long prevailed, in opposition to the modern or natural.

Claude (klōd), JEAN, a French protestant preacher and professor of the college at Nîmes, born in 1619. He entered into controversy with Arnauld and Bossuet, and on the revocation of the Edict of Nantes took refuge in The Hague, where he died in 1687. His chief work was the *Défense de la Réformation* (1673).

Claude (klōd), ST., a town of France, department of the Jura, at the confluence of the Bienne and Tacon. It is the see of a bishop, and has a handsome cathedral and communal college, and a fine promenade along the Bienne. It is celebrated for turnery, hardware, musical boxes, etc. Pop. 9024.

Claude Lorraine (klaud, or klōd, lor-rān'), a landscape painter whose real name was *Claude Gelée*, but who was called *Lorraine* from the province where he was born in 1600. When twelve years old he went to live with his brother, an engraver in wood at Friburg, went from him to study under Godfrey Waats at Naples, and was afterwards employed at Rome by the painter Agostino Tassi, to grind his colors and do the household drudgery. On leaving Tassi he traveled in Italy, France and Germany, but settled in 1627 in Rome, where his works were greatly sought for and where he lived much at his ease until 1682, when he died of the gout. The principal galleries of Italy, France, England, Spain and Germany are adorned with his paintings, that on which he himself set the greatest value being the painting of a small wood belonging to the Villa Madama (Rome). He excelled in luminous atmospheric effects, of which he made loving and elaborate studies. His figure work, however, was inferior, and the figures in many of his paintings were supplied by Lauri and Francesco Allegrini. He made small copies of all his pictures in six books known as *Libri di Verità* (Books of Truth), which form a work of great value (usually called the *Liber Veritatis*), and much esteemed by students.

Claudianus (klą-di-an'us), CLAUDIUS (commonly called Claudian), a Latin poet, native of Alexandria, lived the end of the fourth and beginning of the fifth century after Christ. under the Emperor Theodosius and his sons. He did much to recall to dying Rome the splendors of the Augustan literature, ranking considerably above any other of the later poets. Besides several panegyrical poems on Honorius, Stilicho, and others, we possess two of his epic poems, the *Rape of Proserpine*, and an unfinished *War of the Giants*, eclogues, epigrams, and occasional poems.

Claudius (klą'di-us), often also called *Clodius*, the name of a distinguished Roman family of antiquity. See *Appius Claudius*.

Clau'dius, or, in full, TIBERIUS CLAUDIUS DRUSUS NERO GERMANICUS, a Roman emperor, son of Claudius Drusus Nero, stepson of Augustus and Antonia, the daughter of Augustus' sister; born at Lyons (10 B.C.). He lived in privacy, occupying himself with literature, the composition of a Roman history, and other works, until the murder of Caligula, when he was dragged from his hiding-place and proclaimed emperor (41 A.D.). The early years of his reign were marked by the restoration of the exiles, the embellishment of Rome, the addition of Mauritania to the Roman provinces, and successes in Germany and Britain. But later he became debauched, left the government to his wives, and in particular to Messalina, who with his freedmen committed the greatest enormities. He was poisoned by his fourth wife, Agrippina (mother of Nero), A.D. 54.

Tiberius Claudius.

Claudius, MATTHIAS, a German poet, born in 1741 near Lübeck. His works, which are on a great variety of subjects, are all of a popular character. any many of his songs have become a part of the national melodies. In later life he became a convert to religious mysticism, and died at Hamburg in 1815, after having filled several public offices.

Clausenburg. See *Klausenburg.*

Clausthal. See *Klausthal.*

Claustrophobia (klaws-trō-fō'biâ), the fear of being shut in. Like agoraphobia it is a symptom of some cases of neurasthenia.

Clava'ria, a genus of fungi, some species of which are edible.

Claverhouse. See *Graham, John.*

Clavichord. See *Clarichord.*

Clavicle (klav'i-kl), the collar-bone a bone forming one of the elements of the shoulder girdle in vertebrate animals. In man and sundry quadrupeds there are two clavicles each joined at one end to the scapula or shoulder-bone, and at the other end of the sternum or breast-bone. In many quadrupeds the clavicles are absent or rudimentary, while in birds they are united in one piece.

Clavicorn Beetles (Clavicornes), a large family of coleopterous insects, distinguished by the club-shaped character of the antennæ. Burying-beetles and bacon-beetles are typical examples, and there are aquatic as well as terrestrial species.

Clavigero (klâ-vi-*hâ'*rō), FRANCESCO SAVERIO, a Spanish historian, born at Vera Cruz, Mexico, about 1720. He was educated as an ecclesiastic, and resided thirty-six years in the provinces of New Spain, where he acquired the languages of the Mexicans and other indigenous nations, collected many of their traditions, and studied their historical paintings and other monuments of antiquity. On the suppression of the Jesuits by the Spanish government in 1767 he went to Italy, where he wrote his *Mexican History,* and died in 1793.

Clay (klā), the name of various earths, which consist of hydrated silicate of aluminium, with small proportions of the silicates of iron, calcium, magnesium, potassium and sodium. All the varieties are characterized by being firmly coherent, weighty, compact, and hard when dry, but plastic when moist, smooth to touch, not readily diffusible in water, but when mixed not readily subsiding in it. Their tenacity and ductility when moist and their hardness when dry has made them from the earliest times the materials of bricks, tiles, pottery, etc. Of the chief varieties *porcelain-clay, kaolin,* or china-clay, a white clay with occasional gray and yellow tones, is the purest. *Potter's clay* and *pipe-clay,* which are similar but less pure, are generally of a yellowish or grayish color, from the presence of iron. Fire-clay is a very refractory variety, always found lying immediately below the coal; it is used for making fire-bricks, crucibles, etc. *Loam* is the same substance mixed with sand, oxide of iron, and various other foreign ingredients. The *boles,* which are of a red or yellow color from the presence of oxide of iron, are distinguished by their conchoidal fracture. The *ochers* are similar to the boles, containing more oxide of iron. Other varieties are *fuller's earth, Tripoli,* and *boulder-clay,* the last a hard clay of a dark-brown color, with rounded masses of rock of all sizes embedded in it, the result of glacial action. The distinctive property of clays as ingredients of the soil is their power of absorbing ammonia and other gases and vapors generated on fertile and manured lands; indeed, no soil will long remain fertile unless it has a fair proportion of clay in its composition. The best wheats are grown on calcareous clays, as also the finest fruits and flowers of the rosaceous kind. See the separate articles on the chief varieties.

Clay, HENRY, statesman, born in Hanover Co., Virginia, in 1777. After acting as clerk in two or three state offices he commenced business in 1797 as a lawyer at Lexington, Kentucky. He soon became famous as a public speaker, and at the age of twenty-six was a member of the Kentucky legislature. In 1806 he was elected to the United States Senate; and in 1811 to the House of Representatives, where he was at once made speaker. In 1814 he proceeded to Europe and acted as one of the commissioners for adjusting the treaty of peace at Ghent between America and Great Britain. In 1825 he was appointed by President Adams, Secretary of State. He was an unsuccessful candidate for the presidency in 1824, 1832 and 1844. He is best known for his endeavors to shut out European influences from America, and in connection with the 'Missouri Compromise of 1820,' restricting slavery to the states south of lat. 36° 30′ N.; the Compromise Tariff of 1832, and a compromise in 1850 regarding the admission of California, and establishment of territorial government in New Mexico, Utah, etc. This postponed the slavery contest between the sections of the country for ten years. He died at Washington in 1852. Clay was unquestionably one of the greatest orators America has produced and a splendid party chief, idolized by his followers.

Claymore (klā'mōr), formerly the large two-handed, double-

edged sword of the Scotch Highlanders.

Clay-slate, in geology, a rock consisting of clay which has been hardened and otherwise changed, for the most part extremely fissile and often affording good roofing-slate. In color it varies from greenish or bluish gray to lead color.

Clayton, JOHN MIDDLETON, jurist, born in Sussex Co., Delaware, in 1796. He was educated at Yale, studied law, represented Delaware in the United States Senate 1845-49, and in 1849 was appointed Secretary of State by President Taylor. He negotiated an important treaty with England (see next article). He died in 1856.

Clayton-Bulwer Treaty, a treaty between Britain and the United States concluded in 1850, and having reference to the construction of a ship canal across Nicaragua. Both parties agreed not to erect fortifications here, nor to acquire any part of the Central American territory. This treaty was amended in 1901 by the Hay-Paunceforte treaty.

Cleanthes (klē-an'thēs, a Greek Stoic philosopher, born at Assos about 300 B.C. He was a disciple of Zeno for nineteen years, and succeeded him in his school. He died of voluntary starvation at the age of eighty. Only some fragments of his works are extant.

Clear, CAPE, a promontory 400 feet high at the southern extremity of Clear Island, and the most southern point of Ireland, about 7½ miles southeast of Baltimore, County Cork.

Clearance of Vessels (klēr'ans), the examination of vessels by the proper customhouse officers, and the giving of a certificate that the regulations have been duly complied with. Vessels are said to clear inwards or outwards according as they arrive or set sail.

Clearfield (klēr'fēld), a borough, county seat of Clearfield Co., Pennsylvania, on the W. branch of the Susquehanna, 40 miles N. of Altoona. It has products of brick, sewer-pipe, clay, coal, machinery, etc. Pop. (1920) 8529.

Clearing House (klēr'ing), an institution connected with banks and railways. In the former case it is an establishment in large cities where there are many banks, to which each bank connected with it sends every day in order to have its business with the other banks adjusted. The sums due by and to the banks among themselves are here set off against each other and the balance paid or received. In London the balance used to be settled in cash or Bank of England notes. Now, however, the various banking companies and the clearing house itself have accounts at the Bank of England, and the balances are settled by transfers from one account to another. The clearing-house system was introduced by the London city private banking firms in 1775, but the joint-stock companies were in 1854 permitted to share its advantages, and it has been extended to the provincial banks through their London agents. The system has also been adopted in the larger provincial towns, and in New York and other large American cities it is in full operation.—The *Railway Clearing House* is an association instituted to allow the various companies to carry on their traffic over different lines. Thus a passenger can purchase one single ticket which will carry him over lines belonging to several companies, and parcels are conveyed through without additional booking, fresh entries, and consequent delay, the claims of the different companies being adjusted in the clearing house, which is maintained at the common expense.

Clearing-nut (*Strychnos potatorum*), a small tree of the same genus as the nux vomica, common in Indian forests. Its seeds being rubbed on the inside of a vessel containing turbid water speedily precipitate the impurities, this result being due, it is said, to the clarifying effect of the albumen and casein they contain.

Clear'story. See *Clerestory.*

Cleator Moor (klē-ā'tėr mōr), a town of England in Cumberland, 4 miles S. E. of Whitehaven, with coal-mines and iron furnaces. Pop. 8302.

Cleavage (klē-vij), the manner or direction in which substances regularly cleave or split. The regular structure of most crystallized bodies becomes manifest as soon as they are broken. Each fragment presents the form of a small polyhedron, and the very dust appears under the microscope an assemblage of minute solids, regularly terminated. The directions in which such bodies thus break up are called their planes of cleavage; and the cleaving is called *basal, cubic, diagonal,* or *lateral* (or *peritomous*), according as it is parallel to the base of a crystal, to the faces of a cube, to a diagonal plane, or to the lateral planes. In certain rocks again there is a tendency to split along planes which may coincide with the original plane of stratification, but which more frequently cross it at an angle. This tendency is the consequence of the

readjustment by pressure and heat of the components of rocks, which is one of the phases of metamorphism.

Cleburne (klē'burn), a city, county seat of Johnson Co., Texas, 53 miles s. w. of Dallas. It has cotton gins and compress, oil mill, peanut plant, broom factory, car shops, etc. Pop. (1910) 10,364; (1920) 12,820.

Cleckheaton (klek'e-ton), a town of Yorkshire, England, 10 miles w. of Leeds, with woolen and worsted industries, engineering works, etc. Pop. 12,867.

Clef (klef; French for *key*), in music, a sign placed on a line of a staff, and which determines the pitch of the staff and the name of the note on its lines. There are three clefs now in use: the *treble* or G clef, written on the second line; the *mean* or C clef, which may be placed on the first, second, third, or fourth lines; and the *bass* or F clef, seated on the fourth line. The mean clef is seldom used in vocal music except in part songs.

Cleg, a name applied to various insects which are troublesome to horses, cattle, and even to man from their blood-sucking propensities. Such are the great horse-fly, gadfly, or breeze (*Tabānus bovinus*, the *Chrysops, cæcutiens*, and the *Hæmatopŏta pluvialis*).

Clematis (klem'a-tis), a genus of woody climbing plants of the order Ranunculaceæ. The most common species, *C. Vitalba*, virgin's bower or traveler's joy, is conspicuous in British hedges, first by its copious clusters of white blossoms, and afterwards by its feather-tailed silky tufts attached to the fruits. Among the exotic species in greatest favor with horticulturists are *C. flammŭla*, which produces abundant panicles of small, white flowers, and has a fine perfume; *C. cirrhōsa*, remarkable for its large, greenish-white flowers; and *C. viticella*, with its festooning branches adorned with pink or purple bells. *C. Virginiāna* is an American species known by the same name as the English; *C. Jackmanni*, is a well-known garden hybrid. The fruit and leaves of the common clematis are acrid and vesicant.

Clemenceau (cle-mān-sō'), GEORGES B. E., a French statesman, born in La Vendee in 1841. He was educated as a physician and resided in the United States from 1865 to 1869. Returning to France he was elected to the National Assembly; member of the Chamber of Deputies 1876-93 and 1902-20. In his daily, *L'Aurore*, he defended Dreyfus (q. v.), and it was in this paper that Zola's famous *J'Accuse* was published. He was a Radical, but offended the Socialists by refusing to side with the strike of the miners. From 1906 to 1909 he was premier and minister of the interior, and during the Great war (1914-18) he was again called upon to take the reins of office, becoming premier and minister of war in 1917. Recognized as the strongest man in France, popularly called 'The Tiger,' his inspiration was of incalculable benefit in winning the war, and he was one of the towering influences at the peace conference of 1919 when the Treaty of Versailles was being prepared. He resigned in 1920.

Clemens (klem'ens), SAMUEL LANGHORNE, humorist, more generally known by his pseudonym 'Mark Twain,' born in Missouri in 1835. He worked for some time as a compositor in Philadelphia and New York, and then in 1851 learned the business of piloting on the Mississippi. He afterwards went to Nevada and California, working in the mines and editing a newspaper in Virginia City. He subsequently engaged in lecturing, edited for a time a paper in Buffalo, and finally married and settled in Hartford, Connecticut, making this his home for the remainder of his life. Losing his fortune by the failure of a publishing firm into which he had entered, he made a tour of the world in 1896-97, giving lectures and readings, and paying the debts of the firm with the proceeds. He early made his mark as a humorist, and is undoubtedly regarded as the greatest humorist of the period. He died in 1910. His best known works of humor are *The Jumping Frog*, etc. (1867); *Roughing It* (1873); *The Innocents Abroad* (1869); *Tom Sawyer* (1876); *A Tramp Abroad* (1880); *The Prince and the Pauper* (1882); *Life on the Mississippi* (1883); and *Huckleberry Finn* (1885).

Clement (kle'ment), properly TITUS FLAVIUS CLEMENS, commonly known as *Clement of Alexandria*, one of the most famous teachers of the Christian Church in the second and the beginning of the third century. He was converted from paganism to Christianity; and after traveling in Greece, Italy, and the East, became presbyter of the church of Alexandria, and teacher of the celebrated school in that city, in which place he succeeded Pantænus, his teacher, and was succeeded by Origen, his pupil. His chief remaining works are the *Protrep-*

power conferred the various appointments on such of its members as had most influence, or had done it most service, there being thus usually a great change of officials with each change of president, on the understood principle that 'to the victors belong the spoils.' After 1870 attempts at establishing a better state of affairs were made, and in 1883 a bill introducing a system of civil service reform was passed by congress. The act creates a commission, composed of three members appointed by the president and senate, known as the Civil Service Commission. They were to provide rules for open competitive examinations for testing the fitness of applicants for the public service. Under the administration of Cleveland and those of the succeeding presidents the competitive system was greatly extended and it now embraces most of the departments of the government.

Civil War. See *United States.*

Clackmannan (klak-man'an), the smallest county of Scotland, containing little more than 47 square miles, situate on the north side of the Forth, by which it is bounded S. W., while on nearly all the other sides it is inclosed by the countries of Perth and Stirling. The north part of the county is occupied by the Ochil Hills, which are largely given up to sheep-farming, but the other portions are comparatively level and exceedingly fertile, yielding large crops of wheat and beans. The minerals are valuable, especially coal, which abounds. There are also some extensive ironworks, and some large breweries and distilleries; woolens are also manufactured, and tanning, glass-blowing, etc., carried on. The principal towns are Alloa, Tillicoultry, Dollar, and Clackmannan, the county town. Pop. 32,029.

Cladium (klā'di-um), a genus of plants, consisting of twenty-one species of wide distribution, nat. order Cyperaceæ (or sedges). The *C. Mariscus*, or twig-rush, is a British perennial with kelled leaves, having a sharp point and prickly serratures. It is very common in certain fenny districts in Cambridgeshire, etc., and is used for thatching.

Clairac (klā-rāk), a town of France, department Lot-et-Garonne, on the Lot. It was the first town in the south of France to declare in favor of the Reformation. Pop. about 3000.

Clairaut (klā-rō), Alexis Claude, mathematician, born at Paris in 1713. In his eleventh year he composed a treatise on the four curves of the third order, which, with his subsequent *Recherches sur les Courbes à double Courbure*, 1731, procured him a seat in the academy at the age of eighteen. He accompanied Maupertuis to Lapland, to assist in measuring an arc of the meridian, and obtained the materials for his work *Sur la Figure de la Terre*. In 1752 he published his *Théorie de la Lune*, and in 1759 calculated the perihelion of Halley's comet. He died in 1765.

Claire (klār), St., or Santa Clara, Order of, founded in 1212 by a lady of this name, of noble birth, born at Spoleto, Italy, in 1193; died in 1253, and canonized in 1255. It has numerous convents in Europe and America.

Clairton (klār'tun), a city, county seat of Clearfield Co., Pennsylvania, on Susquehanna River, 35 miles N. of Altoona, in a rich farming district. There are various manufactures. Pop. 6264.

Clairvaux (klār-vō), a village of France, department of Aube, celebrated for its magnificent abbey, founded in 1114 or 1115, by St. Bernard, but suppressed at the revolution. The existing buildings have been converted into an immense house of correction. See *Cistercians.*

Clairvoyance (klār-voi'ans; that is 'clear-seeing'), an alleged faculty by which certain persons in certain states, or under certain conditions, are said to be able to see things by some sort of mental or spiritual vision apart altogether from the sense of sight.

Clam, the common name for the bivalves of the genus *Chama*, and some other allied genera. In the eastern United States the clams of market are of two kinds; the hard or round clam (*Venus mercenaria*) and the soft clam (*Mya arenaria*). The former are known in New England by the Indian name 'quohog'; they live on sandy bottoms, and are obtained by raking or dredging. The 'little necks' are young clams of this sort. The soft clam is the Mya—the species used on the American Atlantic coast being *M. arenaria*, while that of Europe is *M. truncata*. It has thin, elongated, white shells, is found deeply buried in mud or sand near shore, and obtained by digging. The largest bivalve mollusc known is the giant clam (*Tridacna*) of the South Pacific region, whose valves may measure two feet across and weigh 500 pounds.

Clamecy (klâm-sē), a town of France, department Nièvre, on the Yonne. It has a fine church, founded in

tikos, *Paidagōgos*, and *Strōmateis or Strōmata* (Patch-work); the first an exhortation to the Greeks to turn to the one true God, the second a work on Christ, the last a collection of brief discussions in chronology, philosophy, poetry, etc. Few of the early Christians had so wide a knowledge of Greek philosophy and literature and it is as a higher philosophic scheme that he mainly discusses Christianity. He was regarded as a saint until Benedict XIV struck him off the calendar.

Clement, CLEMENS ROMANUS, or *Clement of Rome*, one of the 'Apostolic Fathers,' is said to have been the second or the third successor of Peter as bishop of Rome, and the first of the numerous popes named Clement. He is perhaps identical with Consul Flavius Clemens, put to death under Domitian A.D. 95. Various writings are attributed to him, but the only one that can be regarded as genuine is an *Epistle to the Corinthians*, first obtained in a complete form in 1875. It is of importance as exhibiting the first attempt of the Church of Rome to exercise ecclesiastical authority over other churches.

Clement (klā-mäṅ), JACQUES, the assassin of Henry III of France, born in 1567, became a Dominican, and the fanatical tool of the Dukes of Mayenne and Aumale, and the Duchess Montpensier. Having fatally stabbed the king, he was at once killed by the courtiers; but the populace, instigated by the priests, regarded him as a martyr; and Pope Sixtus V even pronounced his panegyric.

Clementi (klā-men'tē), MUZIO, pianist and composer, born at Rome in 1752. As early as his twelfth year he wrote a successful mass for four voices, and had made such progress in the pianoforte that an Englishman, Mr. Beckford, took him to England to complete his studies. He was then engaged as director of the orchestra of the opera in London, and his fame having rapidly increased he went in 1780 to Paris, and in 1781 to Vienna, where he played with Mozart before the emperor. In 1784 he repeated his visit to Paris, but after that remained in England till 1802, when he went back to the continent. He returned in 1810 to England, where he settled down as superintendent of one of the principal musical establishments in London. He died in 1832, and was interred in Westminster Abbey. His most important compositions were his sixty sonatas for the pianoforte and the great collection of studies known as the *Gradus ad Parnassum*, a work of high educative value. He represented perhaps the highest point of technique of his day, and his influence upon modern execution has led to his being characterized as 'the father of pianoforte playing.'

Cleobulus (kle-o-bū'lus), one of the *seven wise men* of ancient Greece, a native of Lindus, who traveled to Egypt to learn wisdom, and became King of Rhodes. He flourished B.C. 560.

Cleomenes (kle-om'e-nēz), the name of three kings of Sparta, the most distinguished of whom is Cleomenes III, the last of the Heraclidæ, king from 236 to 220 B.C. He intended to reform Sparta and to restore the institutions of Lycurgus, and therefore put to death the ephori, made a new division of lands, introduced again the old Spartan system of education, made his brother his colleague, and extended the franchise. He was defeated by the allied Macedonians and Achæans at the battle of Sellasia (B.C. 222), and fled to Egypt, where he was supported by Ptolemy Euergetes, but was kept in confinement by the succeeding Ptolemy. He escaped and attempted to raise a revolt, but failing, committed suicide.

Cleon (klē'on), an Athenian demagogue, originally a tanner by trade. He was well known in public before the death of Pericles, and in 427 B.C. distinguished himself by the proposal to put to death the adult males of the revolted Mytileneans and sell the women and children as slaves. In 425 he took Sphacteria from the Spartans; but in 423 and 422 he was violently attacked by Aristophanes in the *Knights* and in the *Wasps*. He was sent, however, in 422 against Brasidas, but allowed himself to be taken unawares, and was slain while attempting to flee.

Cleopatra (klē-o-pā'tra), a Greek queen of Egypt, born B.C. 69, the eldest daughter of Ptolemy Aulētēs. When she was seventeen her father died, leaving her joint-heir to the throne with his eldest son Ptolemy, whom she was to marry—such marriages being common among the Ptolemies. Being deprived of her part in the government (B.C. 49), she won Cæsar to her cause, and was reinstated by his influence. In a second disturbance Ptolemy lost his life and Cæsar proclaimed Cleopatra Queen of Egypt; though she was compelled to take her brother, the younger Ptolemy, then eleven years old, as husband and colleague. Cæsar continued some time at Cleopatra's court, had a son by her named Cæsarion

(afterwards put to death by Augustus), and gave her a magnificent reception when she subsequently visited him at Rome. By poisoning her brother she remained sole possessor of the regal power, took the part of the triumvirs in the civil war at Rome, and after the battle of Philippi sailed to join Antony at Tarsus. Their meeting was celebrated by splendid festivals; she accompanied him to Tyre, and was followed by him on her return to Egypt. After his conquest of Armenia he again returned to her and made his three sons by her, and also Cæsarion, kings. On the commencement of the war between Augustus and Antony the latter lost a whole year in festivals and amusements with Cleopatra at Ephesus, Samos, and Athens, and when at last the fleets met at Actium, Cleopatra suddenly took to flight, with all her ships, and Antony, as if under the influence of frenzy, immediately followed her. They fled to Egypt, and declared to Augustus that if Egypt were left to Cleopatra's children they would thenceforth live in retirement. Augustus, however, demanded Antony's death and advanced on Alexandria. Believing Cleopatra who had taken refuge in her mausoleum, to be treacherous and dead, Antony threw himself on his sword, and shortly afterwards Cleopatra killed herself by applying an asp to her arm to escape the ignominy of being led in a Roman triumph (B.C. 30). With her the dynasty of the Ptolemies ended.

Cleopatra's Needles, the name given to two Egyptian obelisks, formerly at Alexandria, but one of which is now in London, the other in New York. They are made of the rose-red granite of Syene, and were originally erected by the Egyptian king Thothmes III in front of the great temple of Heliopolis, the On of the Scriptures, where Moses was born and brought up. They were taken to Alexandria shortly before the commencement of the Christian era, and after the death of Cleopatra, but possibly in pursuance of a design originated by her. The London obelisk, which stands on the Thames embankment, was presented to the British government in 1820, but was long left uncared for. In 1877-78, however, it was brought to London by the private munificence of Sir Erasmus Wilson, and erected in its place at a cost of some $50,000. The New York obelisk was presented to the United States by the Khedive of Egypt, and was set up in Central Park in 1881. Each is about 70 feet high and inscribed with numerous hieroglyphics.

Clepsydra (klep'si-drȧ), or *Water-clock*, an ancient instrument for the measurement of time by the escape of water from a vessel through an orifice. In the older ones the hours were estimated simply by the sinking of the surface of the water, in others the water surface is connected with a dial-plate and hand by a system of weights and floats. In the accompanying figure the float A is attached to the end of a chain which is wound round the spindle B, and has at its other extremity the counterweight C. On water being admitted from the cistern D the float rises, the counter-weight descends and turns the spindle, which again turns the hand that marks the hours.

Clepsydra.

Clerestory (klēr'stō-ri), or *Clear-story*, the upper part of the nave in Gothic churches, above the triforium where a triforium is present,

Part of Malmesbury Abbey.
A, Clerestory. B, Triforium. C, Arches of the Nave.

and formed by walls supported on the arches of the nave, and rising above the roof of the side aisles. In these walls windows are inserted for the purpose of increasing the light in the nave.

Clergy (kler'ji; from Greek *klēros*, a lot, through the Latin, *Clericus* and Low Latin *clericia*), the body of ecclesiastical persons, in contradistinction to the *laity*. The Greek word came into use to indicate that this class was to be considered as the particular inheritance and property of God, or else, which is more probable, because it was customary to select by lot those set apart for special religious functions. At first there was no strongly-marked distinction between clergy and laity, but the former soon drew apart, consisting, after the apostolic age, of bishops, priests, and deacons, and in the fourth century of many additional inferior orders, such as subdeacons, acolytes, etc. With the increased complexity of the hierarchy there was a steady accretion of privileges until the burden of these became intolerable to the laity. In England few of these now remain, the clergy being generally regarded as invested with no inherent claim to regard. A clergyman cannot, however, be compelled to serve as juryman, he is exempted from arrest while celebrating divine worship, from acting as bailiff, constable, or like office, from attendance at a court leet; but on the other hand he cannot accept a seat in the House of Commons, engage in trade or farm lands of more than eighty acres without his bishop's consent. The Episcopalians recognize three classes of clergy—bishops, priests and deacons; and generally hold the doctrine of the apostolic succession. Large numbers of Protestants, however, reject this dogma, and believe in the ministry of only one order. The Catholic clergyman, according to the doctrine of the Roman Catholic Church, is endowed in his spiritual character with a supernatural power, which distinguishes him essentially from the layman. *Regular* clergy are those who live according to monastic rule, *secular* clergy those who do not.

Clergy, Benefit of. See *Benefit of Clergy*.

Clergy Pensions have been adopted recently by many of the large denominations in the United States. The plans for establishing funds vary, but in general they depend on contributions from the clergy, supplemented by endowments and gifts from local church organizations.

Clerk, John, of Eldin, near Edinburgh, born 1728; died 1812, a naval tactician, for whom is claimed the invention of the maneuver of *breaking the enemy's line*.

Clerk, Parish, a lay officer of the Church of England, appointed by the churchwardens and vestry, whose duties are to keep the parish register, read the responses and assist in public worship, at funerals, etc.

Clermont-de-Lodève (klăr-mōn-d-lo-dāv), or *Clermont de l'Hérault* (-d-lā-rō), a town of France, dep. of Hérault, 23 miles west by north of Montpellier. Pop. 5187.

Clermont-en-Beauvaisis (klăr-mōn-tăn-bō-vā-sē), or *Clermont de l'Oise* (d-lwäs), a town of France, dep. Oise, 17 miles east by south of Beauvais. Pop. (1906) 4014.

Clermont-Ferrand (klăr-mōn-fă-răn), a town of France, capital of department Puy-de-Dôme, on a hill at the foot of the volcanic range in which the summit of the Puy is conspicuous. It possessed considerable importance under the Romans, and became a bishop's see at a very early period. It is an antique and gloomy town built of dark, volcanic stone. The most remarkable edifices are the cathedral, a huge, irregular, gloomy pile, and the Church of Nôtre Dame, founded in 580. It is visited for its mineral waters and has various manufactures, including chemicals, ropes, hats, etc. Pop. 44,113.

Clermont-Tonnerre (klăr-mōn-ton-năr), the name of a noble French family of whom one of the most celebrated was Count Stanislas, born in 1747. At the breaking out of the revolution of 1789 he endeavored to promote the establishment of a constitutional monarchy, founding with Malouet the Monarchical Club, and with Fontanes the *Journal des Impartiaux*. In 1791 he was charged with assisting the king in his attempt to escape, but was set free on swearing fidelity to the assembly. In 1792, however, he was murdered by the mob at the house of the Countess de Brissac.

Cleveland (klēv'land), a city, the largest of Ohio in population, on the south shore of Lake Erie, at mouth of Cuyahoga River. It is the county seat of Cuyahoga Co., and is divided into two parts by the river Cuyahoga. It is beautifully situated, chiefly on an elevated plain above the lake, and for the most part handsomely laid out with streets crossing each other at right angles. The abundance of trees gives it the name of 'The Forest City.' The Cuyahoga is spanned by several bridges, notably the double-decked High Level bridge, 96 feet above the water, connecting Superior Avenue and the Public Square with Detroit Avenue, built at a cost of $5,407,000. Cleveland has 14 miles of lake frontage, protected by breakwaters. The harbor has a spacious en-

trance; on the east side are the docks for passenger service from other lake ports; westward are the great ore docks, with unexcelled facilities for handling ore. The Cuyahoga River is also lined with docks. The Public Square contains a soldiers' monument, a statue of Moses Cleaveland, after whom the city is named; and a monument to the late Mayor Tom L. Johnson. Under the 'Group Plan' the public buildings are being arranged in a quadrangle enclosing the Mall. These buildings will include the City Hall, Federal Building, Auditorium, Public Library, etc. The plan of the Group Plan advisors included the placing of a Union Station on the north side of the Mall between the city and county buildings, but it was later decided to erect the Union terminal on the Public Square. From the square extends Euclid Avenue, once regarded as the most beautiful street in the country. There are 2179 acres of public parks. The interesting edifices of the city include the Western Reserve University, the Case School of Applied Science, the Art School, Museum of Art, Music Hall, etc.

The city is noted for its great diversity of industries, among which are its various manufactures of iron, the refining of petroleum, wood-working factories, the manufacture of automobiles and parts, paints and varnishes, and machinery of all kinds.

It is an important railroad center, all the trunk lines between New York and Chicago running through or near it, and other lines terminating here. Its lake commerce is very large, consisting chiefly of iron ore, coal and lumber, amounting to nearly $1,000,000,000 yearly. It is one of the chief shipbuilding centers of the country. Settled in 1796 it became a city in 1836. Pop. (1900) 381,768; (1910) 560,663; (1920) 796,836, being now the fifth city in population in the U. S.

Cleveland Heights, a village of Cuyahoga Co., Ohio, 9 miles E. of Cleveland. Pop. (1910) 2955; (1920) 15,236.

Cleveland, a city, county seat of Bradley Co., Tennessee, 29 miles E. N. E. of Chattanooga. It has iron foundries, woolen, hosiery, casket, furniture and flour mills. Pop. (1920) 6522.

Cleveland, STEPHEN GROVER, 22d and 24th president of the United States, born at Caldwell, New Jersey, in 1837; died in 1908. He settled in Buffalo, and having acquired an excellent position as a lawyer was elected mayor in 1881. His record for honesty and efficiency as mayor brought him in 1882 the Democratic nomination for governor of New York, followed by his election; and in 1884 he was nominated for the presidency by the Democratic national convention at Chicago, and was elected on November 4. Civil service reform and tariff reform were advocated by him during his tenure of office, which came to an end in 1889. In 1892 he was again placed in nomination for the presidency by the Democratic party and was a second time elected, his being the first instance of a return to the presidency after an interval of private life. President Cleveland's unflinching honesty and his diligent effort to promote the best interests of the country gave him a high place in public estimation.

Cleves (klēvz; in German *Kleve*), formerly the capital of the dukedom of Cleves, a town in Rhenish Prussia, 70 miles N. W. of Cologne, about a league from the Rhine, with which it is connected by a canal. It has manufactures of tobacco, leather and cottons, and a mineral spring with baths, etc. Pop. 14,684.

Clew Bay, of Ireland, County Mayo, a bay on the west coast containing a vast number of islets, many of them fertile and cultivated.

Cliché (klē'shā), an electrotype or a stereotype cast from an engraving, especially from a woodcut.

Clichy (clē-shē), a town about 4 miles N. W. of Paris, of which it now forms a suburb. Pop. 41,516.

Click-bettle. See *Elater.*

Clients (klī'entz), in ancient Rome, were citizens of the lower ranks who chose a patron from the higher classes, whose duty it was to advise and assist them, particularly in legal cases, and in general to protect them. The clients, on the other hand, were obliged to portion the daughters of the patron if he had not sufficient fortune; to follow him to the wars; to vote for him if he was candidate for an office, etc. This relation continued till the time of the emperors. The term is now applied to one who engages the services of a lawyer.

Cliff-dwellers, a race or family of Indians, now extinct or varied in habit, who formerly dwelt in recesses of cliffs in the valleys of the Rio Grande and Rio Colorado and its tributaries. Their dwelling-places were so far up the sides of steep cliffs as to be almost inaccessible, many of them being skilfully built of stones in the rock openings. The stones are rudely dressed and laid in clay mortar. A coat of clay being spread on the walls outside and often one of plaster on the

© *Ewing Galloway, N. Y.*

IN THE HEART OF THE OHIO METROPOLIS

The Public Square, Cleveland, looking east through Euclid Avenue and Superior Avenue

Clausenburg. See *Klausenburg.*

Clausthal. See *Klausthal.*

Claustrophobia (klaws-trō-fō'biâ), the fear of being shut in. Like agoraphobia it is a symptom of some cases of neurasthenia.

Clava'ria, a genus of fungi, some species of which are edible.

Claverhouse. See *Graham, John.*

Clavichord. See *Clarichord.*

Clavicle (klav'i-kl), the collar-bone a bone forming one of the elements of the shoulder girdle in vertebrate animals. In man and sundry quadrupeds there are two clavicles each joined at one end to the scapula or shoulder-bone, and at the other end of the sternum or breast-bone. In many quadrupeds the clavicles are absent or rudimentary, while in birds they are united in one piece.

Clavicorn Beetles (Clavicornes), a large family of coleopterous insects, distinguished by the club-shaped character of the antennæ. Burying-beetles and bacon-beetles are typical examples, and there are aquatic as well as terrestrial species.

Clavigero (klâ-vi-hâ'rō), FRANCESCO SAVERIO, a Spanish historian, born at Vera Cruz, Mexico, about 1720. He was educated as an ecclesiastic, and resided thirty-six years in the provinces of New Spain, where he acquired the languages of the Mexicans and other indigenous nations, collected many of their traditions, and studied their historical paintings and other monuments of antiquity. On the suppression of the Jesuits by the Spanish government in 1767 he went to Italy, where he wrote his *Mexican History,* and died in 1793.

Clay (klâ), the name of various earths, which consist of hydrated silicate of aluminium, with small proportions of the silicates of iron, calcium, magnesium, potassium and sodium. All the varieties are characterized by being firmly coherent, weighty, compact, and hard when dry, but plastic when moist, smooth to touch, not readily diffusible in water, but when mixed not readily subsiding in it. Their tenacity and ductility when moist and their hardness when dry has made them from the earliest times the materials of bricks, tiles, pottery, etc. Of the chief varieties *porcelain-clay, kaolin,* or china-clay, a white clay with occasional gray and yellow tones, is the purest. *Potter's clay* and *pipe-clay,* which are similar but less pure, are generally of a yellowish or grayish color, from the presence of iron. Fire-clay is a very refractory variety, always found lying immediately below the coal; it is used for making fire-bricks, crucibles, etc. *Loam* is the same substance mixed with sand, oxide of iron, and various other foreign ingredients. The *boles,* which are of a red or yellow color from the presence of oxide of iron, are distinguished by their conchoidal fracture. The *ochers* are similar to the boles, containing more oxide of iron. Other varieties are *fuller's earth, Tripoli,* and *boulder-clay,* the last a hard clay of a dark-brown color, with rounded masses of rock of all sizes embedded in it, the result of glacial action. The distinctive property of clays as ingredients of the soil is their power of absorbing ammonia and other gases and vapors generated on fertile and manured lands; indeed, no soil will long remain fertile unless it has a fair proportion of clay in its composition. The best wheats are grown on calcareous clays, as also the finest fruits and flowers of the rosaceous kind. See the separate articles on the chief varieties.

Clay, HENRY, statesman, born in Hanover Co., Virginia, in 1777. After acting as clerk in two or three state offices he commenced business in 1797 as a lawyer at Lexington, Kentucky. He soon became famous as a public speaker, and at the age of twenty-six was a member of the Kentucky legislature. In 1806 he was elected to the United States Senate; and in 1811 to the House of Representatives, where he was at once made speaker. In 1814 he proceeded to Europe and acted as one of the commissioners for adjusting the treaty of peace at Ghent between America and Great Britain. In 1825 he was appointed by President Adams, Secretary of State. He was an unsuccessful candidate for the presidency in 1824, 1832 and 1844. He is best known for his endeavors to shut out European influences from America, and in connection with the 'Missouri Compromise of 1820,' restricting slavery to the states south of lat. 36° 30' N.; the Compromise Tariff of 1832, and a compromise in 1850 regarding the admission of California, and establishment of territorial government in New Mexico, Utah, etc. This postponed the slavery contest between the sections of the country for ten years. He died at Washington in 1852. Clay was unquestionably one of the greatest orators America has produced and a splendid party chief, idolized by his followers.

Claymore (klâ'mōr), formerly the large two-handed, double-

edged sword of the Scotch Highlanders.

Clay-slate, in geology, a rock consisting of clay which has been hardened and otherwise changed, for the most part extremely fissile and often affording good roofing-slate. In color it varies from greenish or bluish gray to lead color.

Clayton, JOHN MIDDLETON, jurist, born in Sussex Co., Delaware, in 1796. He was educated at Yale, studied law, represented Delaware in the United States Senate 1845-49, and in 1849 was appointed Secretary of State by President Taylor. He negotiated an important treaty with England (see next article). He died in 1856.

Clayton-Bulwer Treaty, a treaty between Britain and the United States concluded in 1850, and having reference to the construction of a ship canal across Nicaragua. Both parties agreed not to erect fortifications here, nor to acquire any part of the Central American territory. This treaty was amended in 1901 by the Hay-Pauncefote treaty.

Cleanthes (klē-an'thēs, a Greek Stoic philosopher, born at Assos about 300 B.C. He was a disciple of Zeno for nineteen years, and succeeded him in his school. He died of voluntary starvation at the age of eighty. Only some fragments of his works are extant.

Clear, CAPE, a promontory 400 feet high at the southern extremity of Clear Island, and the most southern point of Ireland, about 7½ miles south-east of Baltimore, County Cork.

Clearance of Vessels (klēr'ans), the examination of vessels by the proper custom-house officers, and the giving of a certificate that the regulations have been duly complied with. Vessels are said to clear inwards or outwards according as they arrive or set sail.

Clearfield (klēr'fēld), a borough, county seat of Clearfield Co., Pennsylvania, on the W. branch of the Susquehanna, 40 miles N. of Altoona. It has products of brick, sewer-pipe, clay, coal, machinery, etc. Pop. (1920) 8529.

Clearing House (klēr'ing), an institution connected with banks and railways. In the former case it is an establishment in large cities where there are many banks, to which each bank connected with it sends every day in order to have its business with the other banks adjusted. The sums due by and to the banks among themselves are here set off against each other and the balance paid or received. In London the balance used to be settled in cash or Bank of England notes. Now, however, the various banking companies and the clearing house itself have accounts at the Bank of England, and the balances are settled by transfers from one account to another. The clearing-house system was introduced by the London city private banking firms in 1775, but the joint-stock companies were in 1854 permitted to share its advantages, and it has been extended to the provincial banks through their London agents. The system has also been adopted in the larger provincial towns, and in New York and other large American cities it is in full operation.—The *Railway Clearing House* is an association instituted to allow the various companies to carry on their traffic over different lines. Thus a passenger can purchase one single ticket which will carry him over lines belonging to several companies, and parcels are conveyed through without additional booking, fresh entries, and consequent delay, the claims of the different companies being adjusted in the clearing house, which is maintained at the common expense.

Clearing-nut (*Strychnos potatorum*), a small tree of the same genus as the nux vomica, common in Indian forests. Its seeds being rubbed on the inside of a vessel containing turbid water speedily precipitate the impurities, this result being due, it is said, to the clarifying effect of the albumen and casein they contain.

Clear'story. See *Clerestory.*

Cleator Moor (klē-ā'tėr mōr), a town of England in Cumberland, 4 miles S. E. of Whitehaven, with coal-mines and iron furnaces. Pop. 8302.

Cleavage (klē-vij), the manner or direction in which substances regularly cleave or split. The regular structure of most crystallized bodies becomes manifest as soon as they are broken. Each fragment presents the form of a small polyhedron, and the very dust appears under the microscope an assemblage of minute solids, regularly terminated. The directions in which such bodies thus break up are called their planes of cleavage; and the cleaving is called *basal, cubic, diagonal,* or *lateral* (or *peritomous*), according as it is parallel to the base of a crystal, to the faces of a cube, to a diagonal plane, or to the lateral planes. In certain rocks again there is a tendency to split along planes which may coincide with the original plane of stratification, but which more frequently cross it at an angle. This tendency is the consequence of the

posesses in proportion to its area has a decided influence on the climate. The almost unvarying temperature of the ocean equalizes in some degree the periodic distribution of heat among the different seasons of the year, and the proximity of a great mass of water moderates, by its action on the atmosphere, the heat of summer and the cold of winter. Hence the more equable temperature of islands and coasts as compared with that of places far inland, and hence the terms *insular climate* and *continental climate*. The British Isles, Tasmania, and New Zealand enjoy a mild or insular climate as compared with, say, Central Russia or Central Asia. Thus it happens that London has a milder winter and a cooler summer than Paris, though the latter is nearly 3° farther south. Similarly, though Warsaw and Amsterdam are almost in the same latitude, the mean annual temperature of the former is 46.48°, while it reaches at the latter 54.4° Fahr. The proximity of large masses of water involves also the presence of much aqueous vapor in the atmosphere, which may be condensed in abundant rains so as to greatly influence the plant-life of a country. Direction of mountain chains, set of ocean currents, and nature of soil are other modifying elements. In exhibiting graphically the chief climate facts of a region various methods may be adopted, but in all the use of *isothermal lines* is one of the most instructive features. These are lines drawn on a map or chart connecting those places which have the same mean annual temperature or same mean summer and mean winter temperature. In this way we may divide the earth into zones of temperature which by no means coincide with the limits of the zones into which the earth is astronomically divided, and when compared with these on a map show interesting and instructive divergences. Geology teaches that vast changes have taken place in the climate of most if not of all countries, the causes of which are not fully understood.

Climax (klī'maks; Greek, *klīmax*, a ladder or stairs), a rhetorical figure in which a series of propositions or objects are presented in such a way that the least impressive comes first, and there is a regular gradation from this to the most impressive or final.

Climbing Perch (klīm'ing; *Anabas scandens*), a singular fish, type of the family Anabasidæ, remarkable for having the pharyngeal bones enlarged and modified into a series of cells and duplications so that they can retain sufficient water to keep the gills moist and enable the fish to live out of water six days. The climbing perch of India proceeds long distances overland in search of water when the pools in which it has been living have dried up. It is also credited with a power of climbing the rough stems of palm-trees, but as to this latter point authorities disagree. It is known of the climbing perch that the fishermen of the Ganges, who subsist largely on these fishes, are accustomed to put them into an earthen pan when caught; the fishes live for days without water.

Climbing Plants, are plants of weak stems which naturally seek support from their surroundings to rise from the ground. Some are twining plants, rising by winding themselves or their tendrils (*cirri*) round the trunks of trees, etc. Such are the honeysuckle and scarlet runner. Others, like the ivy, attach themselves by small roots developed from the stem as they ascend. Some in climbing always twine spirally from right to left, others again always take the opposite direction.

Clincher-built, CLINKER-BUILT (klin'sher, klin'ker), a term in shipbuilding applied to that method whereby the planks are so arranged that the lower edge of the plank above overlies the upper edge of that below it.

Clinical (klin'i-kal) MEDICINE (from the Greek *klinē*, a bed), that department of medicine which teaches how to investigate, at the bedside of the sick, the nature of diseases, to note their course and termination, and to study the effects of the various modes of treatment to which they are subjected. A *clinic* is a medical lecture given in the presence of patients and students.

Clinton (klin'tun), a city, county seat of Dewitt Co., Illinois, 22 miles S. of Bloomington. It has railroad shops and farm interests. Pop. 5898.

Clinton, a city of Vermilion Co., Indiana, 15 miles N. of Terre Haute. There are 27 coal mines within a radius of 7 miles, employing 6000 men; also stove and overall factories, brick and tile plants, etc. Pop. 10,962.

Clinton, a city, county seat of Clinton Co., Iowa, on the Mississippi River, 138 miles W. of Chicago, on 4 railroads. The Chicago & Northwestern car shops are here. It has manufactures of wood products, glucose, starch, bridges, engines, tractors, trucks, boilers, shoes, wire cloth, wagons, locks, harness, candy, paper, flour, etc. Two steel bridges cross

the river here, each a mile long. It has many educational institutions. Pop. (1920) 24,151.

Clinton, a town of Worcester Co., Massachusetts, beautifully situated on the Nashua River, 40 miles N. W. of Boston, with manufactures of ginghams, carpets, wire cloth, woolens, etc. Pop. (1920) 12,979.

Clinton, a city, county seat of Henry Co., Missouri, 85 miles S. E. of Kansas City. It has flour and cornmeal mills, iron works, etc. Pop. 5098.

Clinton, DE WITT, lawyer and statesman, born in Orange Co., New York, in 1769; died in 1828. Winning eminence in Democratic politics, he was elected United States Senator in 1801. Mayor of New York in 1803, lieutenant-governor of that state in 1811 and governor in 1817. It was due to his influence that the Erie canal was begun and he lived to see it completed and the prosperity which it produced.

Clinton, GEORGE (1739-1812), an American statesman, first governor of New York and vice-president of the United States. He was born at Little Britain, N. Y., the son of Charles Clinton, an American colonist, who came from Ireland in 1729. George Clinton served with his father and brother, James (q. v.), in the expedition against Frontenac, and afterward studied law. In 1777 he was chosen governor of New York, and held office for 21 years in all. In 1804 he was elected vice-president of the U. S. in Madison's administration.

Clinton, SIR HENRY (1738-95), an English general in America. He took part in the battles of Bunker Hill, Long Island, Forts Clinton and Montgomery, and in 1778 succeeded Howe in command of the British army in America. In 1780 he blockaded and captured Charleston. Sir Guy Carleton succeeded him as commander-in-chief in 1781.

Clinton, JAMES (1736-1812), an American soldier, brother of George Clinton (q. v.), born at Little Britain, N. Y. He served at Frontenac in 1758, commanded the forces raised to protect Ulster and Orange counties against the Indians in 1763, and accompanied Montgomery to Quebec in 1775. At Fort Clinton he was defeated by a superior force under Sir Henry Clinton and severely wounded. He was one of the generals with the Sullivan expedition against the Indians in 1779 and was present at the surrender of Cornwallis.

Clio (kli'o), a genus of pteropodous molluscs of which one species, *C. boreälis*, is extremely abundant in the northern seas, constituting the principal part of the food of the whale, and hence often called *whale's food*.

Clipper (klip'er), a modern build of sailing ship, having a long, sharp bow, the greatest beam abaft the center, and a great rate of speed. It was introduced in 1843.

Clitheroe (klith'e-rō), a municipal borough, England, County Lancaster, 28 miles N. N. W. of Manchester. Pop. 11,414.

Clitus (kli'tus), the foster-brother of Alexander the Great. He saved Alexander's life at the Granicus, but was afterwards slain by him in a fit of intoxication, an act for which Alexander always showed the bitterest remorse.

Clive (kliv), ROBERT, Lord Clive and Baron of Plassey, English general and statesman, was born in 1725 in Shropshire. In his nineteenth year he entered the East India Company's service at Madras as a writer, but in 1747 quitted the civil for the military service. It was a perilous time for British interests in India. The French under Dupleix had gained important privileges and large grants of territory, and in alliance with Chunda Sahib, Nabob of Arcot were threatening the very existence of the British establishments. In 1751 Clive, who had already a reputation for skill and courage, marched on the large city of Arcot with 200 British troops and 300 Sepoys, and took it, although strongly garrisoned, without a blow, withstood a siege by Chunda Sahib for nearly two months, and at last routed the enemy, took possession of important posts, and returned to Madras completely victorious. In 1753 he sailed to England to recover his health, and was received with much honor. Two years later he was back in India, in his governorship of St. David's, from which he was soon summoned to command the expedition sent to Bengal, where the Nabob Suraj-ud-Dowlah had attacked the British, destroyed their factories, taken Calcutta, and suffocated over 120 of his prisoners in the Black Hole. Clive soon took possession of Calcutta and brought Suraj-ud-Dowlah to terms, but having no trust in the loyal intentions of the nabob he resolved to dethrone him. With the help of Meer Jaffier, one of the nabob's officers, he effected his purpose, and in the battle of Plassey completely overthrew Suraj-ud-Dowlah's forces. Meer Jaffier now became the new nabob, and Clive was made Governor of Calcutta. Here he was equally successful against the encroachments of the Dutch, defeating their forces both by sea and

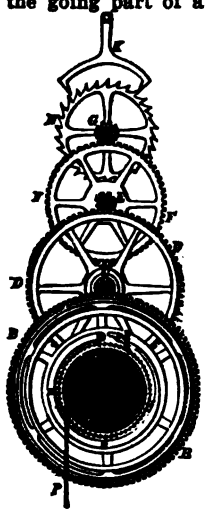
land. Clive now visited England again, where his success was highly applauded without much inquiry as to the means; and in 1761 he was raised to the Irish peerage with the title of Lord Clive, Baron of Plassey. In 1764 fresh troubles in India brought him back, but now as President of Bengal, with command of the troops there. Before his arrival, however, Major Adams had already defeated the Nabob of Oude, and Lord Clive had only the arranging of the treaty by which the company obtained the disposal of all the revenues of Bengal, Bahar, and Orissa. In 1767 he finally returned to England. In 1773 a motion supported by the minister was made in the House of Commons that 'Lord Clive had abused the powers with which he was entrusted,' but it was rejected for a resolution that 'Lord Clive had rendered great and meritorious services to his country.' His health was by this time broken, and in one of his habitual fits of melancholy he put an end to his life, November 22, 1774. Clive was of a reserved temper, although among his intimate friends he could be lively and pleasant. He was always self-directed and secret in his decisions, but inspired those under his command with the utmost confidence, owing to his bravery and presence of mind. In private life he was kind and exceedingly liberal. He married the sister of the astronomer-royal Dr. Maskelyne, by whom he had two sons and three daughters.

Clivers. See *Cleavers.*

Cloaca (klō-a'ka), an underground conduit for drainage, of which the oldest known example is the *Cloaca Maxima*, or great sewer at Rome, built some 2500 years ago. A portion of it is still standing. It is about 13 feet high and as many wide.—The term is also applied to the excrementory cavity in birds, reptiles, many fishes and lower mammalia (Monotremata), formed by the extremity of the intestinal canal, and conveying outwards the fæces, urine, etc.

Clock, an instrument for measuring time and indicating hours, minutes, and usually seconds, by means of hands moving on a dial-plate, and differing from a watch mainly in having the movement of its machinery regulated by a pendulum, and in not being portable. The largest and most typical clocks also differ in having their machinery set in motion by means of a falling weight or weights, the watch wheelwork being moved by the force of an uncoiling spring; but many clocks also have a spring setting their works in motion. The use of a *horologium*, or hour-teller, was common even among the ancients, but their timepieces were nothing else than sun-dials, hour-glasses, and clepsydræ. In the earlier half of our era we have accounts of several attempts at clock construction: that of Boethius in the 6th century, the clock sent by Harun al Rashid to Charlemagne in 809, that made by Pacificus, Archdeacon of Verona, in the 9th century, and that of Pope Sylvester II in the 10th century. It is doubtful, however, if any of these was a wheel-and-weight clock, and it is probably to the monks that we owe the invention of clocks set in motion by wheels and weights. In the 12th century clocks were made use of in the monasteries, which announced the end of every hour by the sound of a bell put in motion by means of wheels. From this time forward the expression, 'the clock has struck,' is often met with. The hand for marking the time is also made mention of. In the 14th century there are stronger traces of the present system of clockwork. Dante particularly mentions clocks. Richard, Abbot of St. Albans in England, made a clock in 1326 such as had never been heard of till then. It not only indicated the course of the sun and moon, but also the ebb and flood tide. Large clocks on steeples likewise were first made use of in the 14th century. Watches are a much later invention, although they have likewise been said to have been invented as early as the 14th century. A celebrated clock, the construction of which is well known, was set up in Paris for Charles V in 1379, the maker being Henry de Vick, a German. It probably formed a model on which clocks were constructed for nearly 300 years, and until Huyghens applied the pendulum to clockwork as the regulating power, about 1657. The great advantage of the pendulum is that the beats or oscillations of a pendulum all occupy substantially the same time (the time depending on its length), hence its utility in imparting regularity to a time-measurer. The mechanism by which comparative regularity was previously attained, though ingenious and simple, was far less perfect; and the first pendulum *escapement*, that is, the contrivance by which the pendulum was connected with the clock-work, was also less perfect than others subsequently introduced, especially Graham's *dead-beat* escapement, invented in 1700. (See *Escapement.*) In a watch the balance-wheel

and spring serve the same purpose as the pendulum, and the honor of being the inventor of the balance-spring was contested between Huyghens and the English philosopher Dr. Hooke. Various improvements followed, such as the chronometer escapement, and the addition of a compensation adjustment, by which two metals having unequal rates of expansion and contraction under variations of temperature are combined in the pendulum or the balance-wheel, so that, each metal counteracting the other, the vibrations are isochronous under any change of temperature. This arrangement was perfected by Harrison in 1726, and is especially useful in navigation. The accompanying cut shows the going part of a clock in its simplest form. A is a drum on which is wound the cord P, to which the weight is attached, the drum having a projecting axis with a square end to receive the key in winding up the clock. The drum is connected with B, the first wheel of the train, by means of the ratchet-wheel F, and catch E, which allow the clock to be wound up without turning B. The wheel B drives the pinion C and the wheel D, the latter called the minute wheel; and there is a similar connection between D, E, F, G, and H. The last is named the escapement wheel, and into its teeth work the pallets of the anchor K, which swings backward and forward with the pendulum. The wheel D turns once in an hour, the wheel H, 60 times (the pendulum marking seconds), and by means of other wheels, and one axis working inside another, the clock hands and dial show hours, minutes, and seconds. The striking machinery of a clock, or that by which hours, quarters, etc., are sounded, is no necessary part of a clock, and forms indeed a separate portion of the works, usually driven by a separate falling weight, and coming into play at certain times, when there is a temporary connection between the two portions of the clock machinery. See also *Watch*.



Clockwork.

Clodius (klō'di-us), Publius, a notorious public character of ancient Rome, son of Appius Claudius Pulcher, who was consul about 79 B.C. He served in the third Mithridatic war under Sucullus, and filled different high posts in the provinces of the East, where his turbulence was the cause of serious disturbances. Returning to Rome, he became a popular demagogue, was elected tribune in 59 B.C., was the means of procuring Cicero's banishment, and continued to be a ringleader in all the seditions of the time till killed in an encounter between his followers and those of Titus Annius Milo. One of Cicero's orations was written in defense of Milo.

Clog-almanac, an almanac or calendar made by cutting notches or characters on a *clog* or block, generally of wood. The block had generally four sides, three months for each edge. The number of days is marked by notches, while various symbols are used to denote saints' days, the golden number, etc.

Clogher (klō'gėr), a village and old episcopal see of Ireland in County Tyrone, with cathedral and bishop's palace. The see, of which St. Patrick is said to have been the first bishop, is united with that of Armagh. Pop. about 250.

Cloisonné (klwȧ-son-ā). See *Enamel*.

Cloister (kloiś'tėr), an arched way or gallery, often forming part of certain portions of monastic and collegiate buildings, usually having a wall of the building on one side, and an open colonnade, or a series of windows with piers and columns adjoining an interior yard or court on the other side. Such galleries were originally intended as places of exercise and recreation, the persons using them being under cover. The term is also used as equivalent to convent or monastery.

Clonakilty (klo-na-kil'ti), a seaport of Ireland, County Cork, with a considerable trade in grain. Pop. 3676.

Clonmel (klon-mel'), a municipal and until 1885, parliamentary borough of Ireland, partly in County Waterford and partly in County Tipperary. It lies in a beautiful valley on both sides of, and on two islands in, the river Suir, and has a jail, barracks, courthouse, etc.; carries on tanning, brewing, and flour-milling, and has a trade in agricultural produce. It was the birthplace of Sterne. Pop. about 10,200.

Clontarf (klon'turf), a town of Ireland, County Dublin, on the northern shore of Dublin Bay. It is a much-frequented watering-place and is historically interesting as the scene of Brian Boroimhe's victory over the Danes in 1014. Pop. 5105.

Cloots (klōts), JEAN BAPTISTE, BARON a singular character well known during the revolutionary scenes in France under the appellation of *Anacharsis Cloots*. He was born at Cleves in 1755, and was brought up at Paris. He became possessed of a considerable fortune, which he partly dissipated in fantastic schemes for the union of all peoples and races in one democratic brotherhood. The outbreak of the French revolution afforded him the kind of career he sought. In 1790, Cloots presented himself at the bar of the national assembly, accompanied by a considerable number of enthusiastic followers of various nationalities, English, German, Italian, Spanish, Arabians—or Parisians dressed up as such. He described himself as the orator of the human race, and demanded the right of confederation, which was granted him. His enthusiasm for radical reforms, his hate of Christianity and of royalty, and a gift of 12,000 livres on behalf of the national defense, gained him in Sept., 1792, election to the national convention, in which he voted for the death of Louis XVI in the name of the human race. But becoming an object of suspicion to Robespierre, he was arrested and guillotined March 24, 1794. He met his fate with great indifference.

Cloquet (klo'kwet), a village of Carlton Co., Minnesota, 30 miles w. of Duluth. It has lumber and paper mills, etc. Pop. (1920) 5127.

Close Corporation, a corporation which fills up its own vacancies, the election of members not being open to the public.

Close-hauled, in navigation, said of a ship when the general arrangement or trim of the sails is such as to enable her to sail as nearly against the wind as possible.

Closure (klōs'ūr), a rule in British parliamentary procedure, adopted in 1887 by which, at any time after a question has been proposed, a motion may be made with the speaker's or chairman's consent 'That the question be now put,' when the motion is immediately put and decided without debate or amendment. So also if a clause of a bill is under debate a motion that it stand or be added may be put and carried in the same way. The motion must be supported by more than 100 members and opposed by less than 40, or have the support of 200 members. The introduction of the closure was intended to prevent debates from being too long continued.

Cloth, a fabric formed by interweaving threads or fibers of animal or vegetable origin, as wool, hair, cotton, flax, hemp, etc. Cloth may also be made by *felting* as well as by weaving. See *Cotton*, *Woolen*, *Silk*, etc.

Clothes-moth, the name common to several moths of the genus *Tinĕa*, whose larvæ are destructive to woolen fabrics, feathers, furs, etc., upon which they feed, using at the same time the material for the construction of the cases in which they assume the chrysalis state.

Clothing (klō'*th*ing), the clothes or dress, that is, the artificial coverings, collectively, which people wear. Nothing is more necessary to comfort than that the body should be kept in nearly a uniform temperature, thus preventing the disturbance of the important excretory functions of the skin by the influence of heat or cold. A considerable degree of cold often lays the foundation of the whole host of chronic diseases, foremost among which are found scrofula and consumption. The only kind of dress that can afford the protection required by the changes of temperature to which the cooler or temperate climates are liable is *woolen*. Those who would receive the advantage which the wearing of wool is capable of affording must wear it next to the skin; for it is in this situation only that its health-preserving power can be felt. The great advantages of woolen cloth are briefly these:—the readiness with which it allows the escape of sweat through its texture; its power of preserving the sensation of warmth to the skin under all circumstances; the slowness with which it conducts heat; the softness, lightness, and pliancy of its texture. *Cotton cloth*, though it differs but little from linen, approaches nearer to the nature of woolen, and on that account must be esteemed as the next best substance of which clothing may be made. *Silk* is the next in point of excellence, but it is very inferior to cotton in every respect. *Linen* possesses the contrary of most of the properties enumerated as excellencies in woolen. It retains the matter of perspiration in its texture, and it conducts heat too rapidly.

Clotho (klō'thō), in Greek mythology that one of the three Fates of Parcæ whose duty it was to spin the thread of life, while Lachesis assigned the lot, and Atropos, the Inflexible, cut the

thread. The three appear in Hesiod as the daughters of Zeus and Themis. In art Clotho was represented by the spindle, Lachesis by the globe, and Atropos by a sundial.

Cloture, the closing of debate in a legislative body. The lack of any provision for this in the Senate of the United States has often led to interminable debates, and in certain cases to the defeat of important bills with majorities in their favor, through being talked to death by a minority. On March 8, 1917, a bill was passed establishing the right to close debate under certain conditions. It provided that in two days after notice in writing has been given by 16 Senators the closing of debate on a particular bill shall be called for, and, if settled in the affirmative by a two-thirds vote, that bill shall be held before the Senate until its final disposition, each Senator being limited to one hour's debate in all on the bill, with its amendments and motions arising from it. Also after the two-thirds vote no amendment shall be offered without unanimous consent.

Cloud-Cirrus.

Cloud-Cumulus.

Cloud-Stratus.

Cloud-Nimbus.

Cloud, a collection of visible vapor or watery particles suspended in the atmosphere at some altitude. They differ from fogs only by their height and less degree of transparency. The average height of clouds is calculated to be 2½ miles, thin and light clouds being much higher than the highest mountains, while thick, heavy clouds often touch low mountains, steeples and even trees. Clouds differ much in form and character, but are generally classed (following Luke Howard, in his *Essay on Clouds*), into three simple or primary forms, viz.:—1. The *cirrus*, so called from its resemblance to a lock of hair, and consisting of fibers which diverge in all directions. Clouds of this description float at a great height, usually from 3 to 5 miles above the earth's surface. Long, streaky forms are called *mare's tails*. 2. The *cumulus* or *heap*, a cloud which assumes the form of dense convex or conical heaps, resting on a flattish base; called also summer-cloud. Under ordinary circumstances these clouds accompany fine weather, especially in the heat of summer, and accompany a brisk wind. Each cumulus cloud is at the top of a column of ascending warm, aqueous vapor. They attain their greatest size early in the afternoon and gradually decrease towards sunset. 3. The *stratus*, so named from its spreading out uniformly in a horizontal layer, which receives all its augmentations of volume from below. It belongs essentially to the night, and is frequently seen on calm summer evenings after sunset ascending from the lower to the higher grounds, and dispersing in the form of a cumulus at sunrise. These three primary forms of clouds are subdivided as follows:—1. The *cirro-cumulus*, composed of a collection of cirri, and spreading itself fre-

quently over the sky in the form of beds of delicate snowflakes. 2. The *cirro-stratus* or *wane-cloud*, so called from its being generally seen slowly sinking, and in a state of transformation; when seen in the distance, a collection of these clouds suggests the resemblance of a shoal of fish, and the sky, when thickly mottled with them, is called in popular language a *mackerel sky*. 3. The *cumulo-stratus* or *twain-cloud*, one of the grandest and most beautiful of clouds, and consisting of a collection of large, fleecy clouds overhanging a flat stratum or base. 4. The *nimbus*, *cumulo-cirro-stratus*, or *rain-cloud*, recognizable, according to Mr. Howard, by its fibrous border and uniformly gray aspect. It is a dense cloud spreading out into a crown of cirrus and passing beneath into a shower. It presents one of the least attractive appearances among clouds, but it is only when the dark surface of this cloud forms its background that the splendid phenomenon of the rainbow is exhibited in perfection.

Cloud (klō), ST., a town, France, department Seine-et-Oise, 6 miles s. w. from Paris, charmingly situated on the slope of a hill overlooking the river Seine. It is celebrated for its château and its magnificent park, a favorite holiday resort of the Parisians. As the residence of the monarchs of France, St. Cloud is historically interesting. Louis XIV bought the old château and presented it to his brother, the Duke of Orleans, who enlarged and transformed it into a splendid palace, which became the residence of Henrietta, queen of Charles I of England, during her exile. It was sold by Louis Philippe of Orleans to Marie Antoinette, and after the revolution chosen by Napoleon for his residence. It was the summer residence of Napoleon III, and was greatly damaged in the Franco-German War. Pop. 7195.

Cloudberry (cloud'ber-i), or MOUNTAIN BRAMBLE (*Rubus chamæmōrus*), a fruit found plentifully in the north of Europe, Asia, and America, of the same genus with the bramble or blackberry. The plant is from 4 to 8 or 10 inches high, with a rather large handsome leaf, indented and serrated at the edges. The flowers are large and white, and the berries, which have a very fine flavor, are orange yellow in color, and about the size of a bramble-berry.

Clough (kluff), ARTHUR HUGH, an English poet, born at Liverpool, 1819. He studied under Dr. Arnold at Rugby, and then at Oxford, where he highly distinguished himself. On his return from a tour in America (1852) he was appointed an examiner attached to the educational branch of the privy-council office. He died in 1861, at Florence, while returning from a journey to Greece. His poems, of which the best known are *Bothie of Tober-na-Vuolich*, *Amours de Voyages*, and the *Tragedy of Dipsychus*, were published, along with a memoir, in 1862.

Clove Bark, or CULIL'AWAN BARK, is furnished by a tree of the Molucca Islands (*Cinnamōmum Culilawan*). It is in pieces more or less long, almost flat, thick, fibrous, covered with a white epidermis of a reddish-yellow inside, of a nutmeg and clove odor, and of an aromatic and sharp taste. In commerce the name is also given to the bark of the *Myrtus caryophyllāta*. It is of a deep-brown color, very thin and hard, and has similar properties to cinnamon.

Clove-gillyflower (klōv-jil'flower), the carnation, or a clove-scented variety of it.

Clover, or TREFOIL (klō'ver, trē'-foil), a name of different species of plants of the genus *Trifolium*, nat. order Leguminosæ. There are about 150 species. Some are weeds, but many species are valued as food for cattle. *T. pratense*, or common red clover, is a biennial, and sometimes, especially on chalky soils, a triennial plant. This is the kind most commonly cultivated, as it yields a larger product than any of the other sorts. *Trifolium repens*, or white clover, is a most valuable plant for pasturage over the whole of Europe, Central Asia, and North America, and has also been introduced into South America. The bee gathers much of its honey from the flowers of this species. *T. hybridum*, alsike, hybrid, or Swedish clover, has been long cultivated in the south of Sweden, and for some time also in other countries; it is strongly recommended for cold, moist, stiff soils. It resembles the common red clover in duration, stature and mode of growth. *T. medium*, perennial red or meadow clover, much resembles the common red, but differs somewhat in habit, and the bright-red flowers are larger and form a less compact head. Its produce is less in quantity, and not so nutritive, as that of the common red. *T. incarnatum*, crimson or Italian clover, is much cultivated in France and Italy and is spreading to other countries. It bears oblong or cylindrical spikes of rich crimson flowers, and is sometimes planted for decorative purposes in flower gar-

dens. The name clover is often applied to plants like medick and melilot, cultivated for the same purpose and belonging to the same natural order, although not of the same genus.

Clover-weevil, a kind of weevil, genus *Apion*, different species of which, or their larvæ, feed on the leaves and seeds of the clover, as also on tares and other leguminous plants. *A. apricans*, of a bluish-black color, and little more than a line in length, is especially destructive.

Cloves (klōvz), a very pungent aromatic spice, the dried flower-buds of *Caryophyllus aromaticus*, a native of the Molucca Islands, belonging to the myrtle tribe, now cultivated in Sumatra, Mauritius, Malacca, Jamaica, etc. The tree is a handsome evergreen from 15 to 30 feet high, with large, elliptical, smooth leaves and numerous purplish flowers on jointed stalks. Every

Clove (*Caryophyllus aromaticus*).

part of the plant abounds in the volatile oil for which the flower-buds are prized. The spice yields a very fragrant odor, and has a bitterish, pungent, and warm taste. It is sometimes employed as a hot and stimulating medicine, but is more frequently used in culinary preparations.

Clovis (klō'vis; from old Ger. *Chlodwig*, mod. Ger. *Ludwig*, Fr. *Louis*), King of the Franks, born 465, succeeded his father Childeric in the year 481, as chief of the warlike tribe of Salian Franks, who inhabited Northern Gaul. In 486 he overthrew the Roman governor at Soissons and occupied the country between the Somme and the Loire. The influence of his wife Clotilda, a Burgundian princess, at length converted him to Christianity, and on Dec. 25, 496, he was baptized with several thousands of his Franks at Rheims, and was saluted by Pope Anastasius as 'most Christian king,' he being orthodox, while most of the western princes were Arians. It now became his object to rid himself by any means of all the other Frankish rulers, in order that he might leave the whole territory of the Franks to his children; and in this purpose he succeeded by treachery and cruelty. He died at Paris, which he had made his capital, on Nov. 27, 511, in the thirtieth year of his reign. In the last year of his reign Clovis had called a council at Orleans, from which are dated the peculiar privileges claimed by the kings of France in opposition to the pope.

Clown, the buffoon or practical jester in pantomime and circus performances. On the old English stage the clown was the privileged laughter-provoker, who, without taking any part in the dramatic development of the piece represented, carried on his improvised jokes and tricks with the actors, often indeed addressing himself directly to the audience instead of confining himself to the scheduled play upon the stage. In Shakespere's dramas a distinct part is assigned to the clown, who no longer appears as an extempore jester, although the part he plays is to a certain extent in keeping with his traditional functions. He is now confined to the pantomime and the circus, in the former of which he plays a part allied to that of the French *pierrot*.

Cloyne (kloin), a town in Ireland, 16 miles E. by S. of Cork, the seat of a Roman Catholic bishop. From 1638 to 1833 it was the see of a bishop of the Established Church, but in the latter year it was united with Cork and Ross. Pop. about 1400.

Club, a select number of persons in the habit of meeting for the promotion of some common object, as social intercourse, literature, politics, etc. It is a peculiarly English institution, which can scarcely be said to have taken root in any other country except America. The coffee-houses of the 17th and 18th centuries are the best representatives of what is meant by a modern club, while the clubs of that time were commonly nothing but a kind of restaurants or taverns where people resorted to take their meals. But while anybody was free to enter a coffee-house, it was necessary that a person should have been formerly received as a member of a club, according to its regulations, before he was at liberty to enter it. Among the earliest of the London clubs was the Kit-cat Club, formed in the reign of Queen Anne, among whose forty members were dukes, earls, and the leading authors

to ride on horseback, the use of carriages being considered effeminate. They do not appear to have become common till the fifteenth century, and even then were regarded exclusively as vehicles for women and invalids. Later on they became, especially in Germany, part of the appendages of royalty. They seem to have been introduced into England the middle of the sixteenth century, but were long confined to the aristocracy and the wealthy classes. Hackney-coaches were first used in London in 1625. They were then only twenty in number, and were kept at the hotels, where they had to be applied for when wanted. In 1634 coaches waiting to be hired at a particular stand were introduced. and had increased to 200 in 1652, to 800 in 1710, and to 1000 in 1771. Stage-coaches were introduced into England about the same time as hackney-coaches. The first stage-coach in London appears to have run in the seventeenth century, and before the end of the century they were started on three of the principal roads in England. Their speed was at first very moderate, about 3 or 4 miles an hour. They could only run in the summer, and even then their progress was often greatly hindered by floods and by the wretched state of the roads generally. In 1700 it took a week to travel from York to London; in 1754 a body of Manchester merchants started a conveyance, the Flying Coach, of an improved kind, which did the journey to London in the unusually short period of four days and a half. The system of mail-coaches was established in London in 1784 and these continued to be the means of traveling in England until their place was taken by the railways. In the United States the unsettled state of the roads in the colonial period delayed the introduction of coaches and it was late in the eighteenth century before a stage-coach line was started between Philadelphia and New York, the two largest cities, a wagon twice a week, and making three miles an hour, sufficing for all travel at first. In 1766 a coach was put on that made the journey in two days, and was advertised as a 'flying machine.' In 1789 it took a week to travel by stage from New York to Boston, the coaches often sticking fast in the mud. Within recent years the coach has largely been replaced by the automobile.

Coadjutor (kō-a-jö'tor), a Latin term, nearly synonymous in its original meaning with *assistant*. The term is especially applied to an assistant bishop appointed to act for and succeed one who is too old or infirm for duty.

Coagulation (kō-ag-ū-la'shun), the changing of a fluid into a more or less solid substance, or the separation of a substance from a solution, through the substance becoming more or less solid. Thus, albumin of egg can be dissolved in cold water, but if the solution be warmed, the albumin undergoes a change, separates out in white, flocky masses, and cannot again be redissolved in the water. Coagulation is well exemplified by the 'curding' of milk and 'clotting' of blood.

Coahuila (kō-a-wē'la), a state of Mexico, on the frontier of the United States, rich in woods and pastures, and having several silver-mines; area, 63,569 square miles; pop. 367,652.

Coaita (kō'a-ti), *Ateles paniscus*, one of the largest of the S. American monkeys, belonging to those known as spider monkeys, black in color, and very docile in captivity.

Coal is formed from vast deposits of vegetable matter of the carboniferous age, during which the growth of plants was luxuriant. In course of time decay took place in the fallen plants and succeeding centuries covered them with a sediment of mud and sand that arrested their destruction and exerted a pressure that combined with heat, and chemical action slowly drove off most of the hydrogen and oxygen contained in the vegetation, leaving the carbon behind. Hence there are few traces of its vegetable origin found in coal. Nevertheless the outlines of leaves and stems that have entered into its formation are sometimes seen, and in sandstones, clays and shales with which coal is found the plants from which it originated are found distributed freely in the fossil state, and, more rarely, the trunks of trees with roots extending down into the subjacent clay formation. These, though replaced by mineral substances, have preserved their structural features so perfectly that botanists have been able to establish their affinity with existing species. Tree fossils of large size so recognized have been found to be related closely to the arancavia as found in South America and Australia. The commoner forms of vegetable life found in the rocks of the coal formation include the sigillaria and stigmaria, the lepidodendron, the calamite and tree ferns. From the animal fossils in coal it is to be assumed that some deposits occurred in fresh water, probably lakes, while others appear to have occurred at the mouths of rivers reaching salt water. The period during which the transformation of the vegetable into the mineral substance was

Clyde (klīd), a river of Scotland, which has its sources amid the hills that separate Lanarkshire from the countries of Peebles and Dumfries and forms an extensive estuary or firth before it enters the Irish Sea, at the southern extremity of the island of Bute. From its source to Glasgow, where navigation begins, its length is 70 or 80 miles. Near Lanark it has three celebrated falls—the uppermost, Bonnington Linn, about 30 feet high; the next, Cora Linn, where the water takes three distinct leaps, each about as high; and the lowest, Stonebyres, also three distinct falls, altogether about 80 feet. The Clyde, by artificial deepening, has been made navigable for large vessels up to Glasgow, and is the most valuable river in Scotland for commerce. See *Glasgow*.

Clyde, JOHN CUNNINGHAM (1841-1915), an American clergyman and author, born at White Deer Valley, Lycoming Co., Pa.; served in the Civil war; graduated at Lafayette College, 1866, and studied for the ministry at Princeton Theological Seminary, graduating in 1866. He was successively pastor of the Presbyterian churches of Centreville, Iowa (1869-70), Shenandoah, Pa. (1870-72), Fraser, Pa. (1872-79), and Bloomsbury, New Jersey (1879-1901). He was president of the Northampton County Historical and Genealogical Society and chaplain of Lafayette Post 217, G. A. R. Among his many publications are: *History of the Irish Settlement of Pennsylvania; Rosbrugh, a Tale of the Revolution; Life of James Coffin; Guide to Non-Liturgical Prayer; Mohammedanism a Pseudo-Christianity.*

Clyde, LORD, Sir Colin Campbell, was born in Glasgow, in 1792, where his father, John McLiver, a native of Mull, worked as a cabinetmaker. His mother's maiden name was Campbell, and she was the daughter of a small proprietor in Islay. By the assistance of his mother's relations he was educated at the High School of Glasgow, and afterwards at the Military Academy, Gosport. In 1808 he received an ensign's commission in the 9th Regiment of Foot, having previously changed his name to Campbell, at the suggestion of his maternal uncle, an officer in the army. He served in Spain under Sir John Moore and Wellington, being engaged in the battles of Barossa and Vittoria, and having displayed distinguished gallantry at the siege of San Sebastian, where, as well as at the Bidassoa, he was severely wounded. In 1819-25 he was in the West Indies. In 1835 he attained the rank of lieutenant-colonel. In 1842 he was in China in command of the 98th Regiment, and on the termination of the Chinese war took active service in India, where he acquired such reputation in the second Sikh war as to receive the thanks of Parliament and the title of K.C.B. In 1854 he became major-general, with the command of the Highland Brigade in the Crimean war. His services at the battles of Alma and Balaklava, and during the war generally, were conspicuous, so that on the outbreak of the Indian mutiny he was appointed to the chief command there. Landing at Calcutta on August 29, 1857, he relieved Havelock and Outram at Lucknow, and crushed the rebellion entirely before the end of the year. For his services here Sir Colin received the thanks of both houses of Parliament, was created a peer with the title of Baron Clyde, and had an income of $10,000 a year allotted him. In 1862 he was made field-marshal. He died August 14, 1863, and was buried in Westminster Abbey.

Clyster (klis'tẽr), an injection or enema, a medicated substance introduced into the lower bowel, usually for the purpose of expelling its contents, but sometimes also for the purpose of being retained, as when opium is thus administered in cases of diarrhœa.

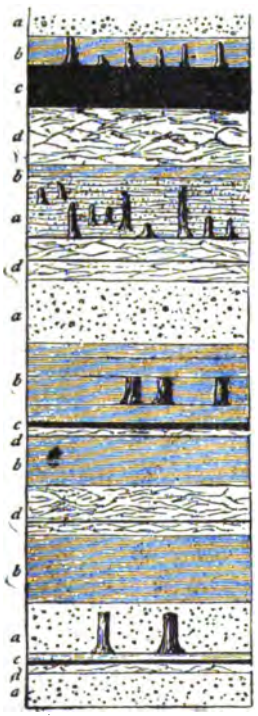
Clytemnestra (klit-em-nes'tra), in Greek mythology, daughter of King Tyndareus and Leda, and half-sister of Helen. During the absence of Agamemnon in the war against Troy she bestowed her favors on Ægisthus, and, in connection with him, murdered Agamemnon on his return from Troy, and, together with her paramour, governed Mycenæ for seven years. Her son Orestes killed them both. See *Agamemnon* and *Orestes*.

Cnidus (nī'dus), or GNIDUS, an ancient Greek town in Caria, a province of Asia Minor, a great seat of the worship of Aphroditē (Venus), who had three temples here, in one of which was a famous statue of the goddess by Praxiteles.

Coach (kōch), a general name for all covered carriages drawn by horses and intended for the rapid conveyance of passengers. The earliest carriages appear to have been all open, if we may judge from the figures of Assyrian and Babylonian chariots found on the monuments discovered amid the ruins of Nineveh and Babylon. At Rome both covered and uncovered carriages were in use. After the fall of the Roman Empire they went out of use again, and during the feudal ages the custom was

effected was of long duration, so long as to be quite undeterminable.

Anthracite, or hard coal, has undergone a greater degree of decomposition than bituminous or soft coal. It is the oldest of the coal formations and contains most uncombined carbon, the percentage being from 90 to 94%, the remainder consisting of hydrogen, oxygen and ash. It is pure black, or with a bluish metallic lustre and has a specific gravity of 1.46 or about the same as that of the hard woods. It burns



Section of part of a coal-field, showing a succession of buried trees and land surface; *a*, sandstones; *b*, shales; *c*, coal-seams *d*, under-clays or soils.

with little flame, is practically smokeless and deposits no soot in the chimneys, nor does it give off gas to any extent. Hence it is the ideal fuel for domestic use and for furnaces and malt kilns. It is less abundant than other varieties and greater in price. It was first discovered in Pennsylvania in 1791.

Bituminous, or soft coal, is of later formation than anthracite; it has undergone less pressure and is less decomposed. As its name indicates, it contains bitumen, a soft, mineral substance, a native mixture of hydrocarbons, oxygenated, that oozes out when it is subjected to heat. It contains from 75% to 85% of carbon, with traces of sulphur, and a greater percentage of hydrogen and oxygen than anthracite. It is black and on its smooth surfaces is glossy, but lacks the bluish lustre that sometimes appears in hard coal. It is also softer than anthracite. Its specific gravity is 1.27. In burning it emits a yellowish flame, much greater than that given out by hard coal, and gives less heat, while its imperfect combustion produces heavy, black smoke and diffuses disagreeable gases. The hydrocarbons can be driven off as gases by heating the coal without access of air. In this way one kind of illuminating gas is made and the carbonaceous residue is coke.

Cannel, or gas coal, is of the bituminous variety, but contains less uncombined carbon than the coking or furnace kinds; it burns freely and is used largely in making illuminating gas.

Lignite is of comparatively very recent formation, intermediate between bituminous and peat; indeed, a period of less than five hundred years is known to have converted timber into a sort of lignite. The percentage of carbon in lignite, which is brownish in color, never exceeds 70%, and the ash shows that a considerable quantity of earthy matter enters into its composition. It exhibits much of the structure of the wood from which it is formed. Its heat-giving property is low, hence it can be used only where a hot fire is not needed, but it is very volatile.

Peat is the latest of the coal formations. It has undergone but a partial change from its original state and the slight pressure to which it has been subjected by the small covering of sediment has given it but little density; it contains over 50% of volatile matter. It forms in boggy ground from plants undergoing decay and covered by water. The roots and stems of plants become matted and, mixed with earthy matter, form peat. It contains much water, especially near the top of the layer when removed from the bog, but the bottom greatly resembles lignite in appearance. As a fuel it is chiefly used where coal and wood are scarce and high in price. Many experiments have been made to treat this substance for more general use as a fuel, and considerable success has followed the method of saturating it with petroleum, which is adopted in Southern Russia, where there is an abundance of peat and a cheap supply of petroleum. See *Coal Mining*.

Coal Brass, the iron pyrites found in coal measures, so named on account of its brassy appearance. Coal containing much pyrites is bad for iron smelting, and it is unpleasant for domestic use on account of the sulphurous acid which it gives off on burning. Coal brass is useful in the manufacture of copperas, and in alkali works.

Coalbrookdale (kōl'brụk-dāl), an English coal and iron producing district in Salop, along the bank of the Severn.

Coaldale, a borough in Schuylkill county, Pennsylvania, near Tamaqua. It has coal-mining interests. Pop. (1920) 6336.

Coal-fish, a species of the cod genus (*Gadus carbonarius*), named from the color of its back. It grows to a length of 2½ feet, and is found in great numbers about the Orkneys and the northern parts of Britain. In Scotland it is generally known as the *sethe* or *scath*.

Coal Gas, the variety of carburetted hydrogen, produced from coal, which is used for common gaslight.

Coaling Stations, stations established at various important points over the ocean, where ships, both of the navy and the mercantile marine, may obtain supplies of coal. The utility of such stations, when properly fortified, as points of refuge, defense, and repair in the event of war can hardly be over-estimated. Britain has very many of them in accordance with the width of its interests, the United States, as yet, comparatively few.

Coalition (kō-a-li'shun), a term used in diplomacy and politics to denote a union between different parties not of the same opinions, but who agree to act together for a particular object. Among states it is understood to mean theoretically something less general in its ends and less deeply founded than an *alliance*.

Coal Measures, the upper division of the carboniferous system, consisting of beds of sandstone, shale, etc., between which are coal-seams.

Coal Mining. The depth, thickness and direction of the coal seams having been determined by prospecting, the next step is the provision of shafts. Several considerations govern their location, such as the contour of the surface, the adjacency and availability of transportation, the facility of generating power, the inclination of the strata, the presence of faults and the method of working the coal. In cases where the seams outcrop at the surface, drifts are driven directly into them, and in hilly sections tunnels are opened to them through the intervening rock. It is, however, far more general to have recourse to the sinking of shafts, by which entrance the transmission of power to the workings, their ventilation and the pumping of water is effected. The shafts are driven with particular regard to the depth and the dip of the seam. Where the depth is only moderate and the dip is gentle, it is economical to locate the shafts at the lower level of the seam, whereas where the seam is deep and without inclination it is found advantageous to locate the shafts as near to the centre of the mine as may be, so as to facilitate operations to the greatest possible extent. Shafts vary in size and shape, the determination of which depends particularly on the extent and depth of the workings and somewhat upon the locality. They are either rectangular, which is more common in the United States, owing to the readier supply of timber for lining, elliptical, or circular, the latter shape being now more generally favored because of their greater inherent strength. An important advantage of the circular shaft is that it offers the least resistance to the passage of ventilating air currents. The size of the shafts depends on the depth and output of the mine and the number of cages to be hoisted. A shaft of sufficient size for an output of 1200 to 1500 tons a day should have a diameter of about 20 feet. Two shafts are necessary for each mine, and these must be furnished with a winding gear at the surface. The bottom of the shafts are arched over, forming what is termed the 'porch,' in order to strengthen it, the thickness being proportionate to the weight and pressure that it may be expected to bear, and wooden blocks are sometimes also built into it to give elasticity under sudden pressure and in addition an inverted arch is in some cases built into the floor. Still further protection of the shafts and strengthening against surface weight is afforded by leaving a pillar of solid coal surrounding the shaft. The depth at which coal may be profitably mined is about 3000 feet, although in some cases, as in Belgium, mines are worked at a depth of 4000 feet. The regulations governing the mining of coal vary considerably in different countries and in the United States there is likewise a lack of uniformity and changes are frequently made, so that only general statements are useful here.

Working is carried on by practically two methods, known as pillar work and long-wall work. The first comprises

'pillar-and-stall,' 'bord-and-pillar' and 'room-and-pillar' and is done by driving roads or stalls through the coal and connecting them by cross-passages, leaving pillars of coal between them to support the roof as the workings advance. When sufficient work has been effected in this manner the pillars are cut away and the roof is supported by heavy timbers. In the second, or long-wall work, all the coal is removed as the work proceeds from the pillar at the shaft, the face gradually extending. The waste or 'goaf' is stacked behind, and through this communicating roads are left open. This is what is known as long-wall working forward. The opposite plan, or long-wall working back, is effected by driving the roads to the outside or boundary of the mine and then taking the coal backward towards the shaft. This plan avoids the necessity of keeping roads open through the waste coal and is so far more desirable, but, of course, it involves greater capital outlay. Where spontaneous combustion is probable this plan is chiefly used. Long-wall working is best adapted to thin seams; where the seams are thick, or near the surface, or beneath towns, indeed in all cases where there is danger of subsidence the pillar-and-stall method is practised. In the United States it is the one largely used. In getting the coal it is indispensable that the workings be properly supported. This is carried out by timbering the roofs and sides of roadways and the coal faces, and for this purpose the best materials are pine, fir, and oak, which are creosoted. In the pillar method there is, of course, less need for timber support, the pillars themselves affording the chief protection, but timber roof props are also used to prevent the fall of loose portions, and at the roadways adjacent to the faces cross-pieces are used, supported by props or hitches in the side wall. Still other strengthening is effected in the haulage ways with steel and iron supports, brick arch work or brick walls and girders.

Getting the Coal. The first stage is bringing down the coal, which is done either by blasting without preliminary work, and is called 'shooting off the solid'; or by blasting preceded by undercutting or 'shearing,' so as to give more than one face to the action of the explosive; this requires that grooves be cut vertically parallel to the walls. In the former, called 'holing,' a notch or groove is cut in the floor of the seam, extending about three feet back from the face, leaving the overhanging rock supported by timbers called 'sprags,' to fall of itself or by blasting. All coal seams, except anthracite, have planes of cleavage which admit of ready splitting. Roads driven in the direction of such planes are known as 'ends,' and those driven across them are styled 'bords,' or 'boards,' the latter enabling easier working than from the 'ends.' Cutting by mechanical means is used chiefly in thin seams because of the increased output they allow, the greater speed of the operation, that they produce less small coal, and that there is the minimum risk of the falling of the roof. The principles of operation in the two types of cutters used in the United States are those of a pick or drill and a chain-cutter. The former gives a rapid succession of sharp blows with a long, chisel-like pick; the latter operates with a series of cutting wheels rotating on an endless chain driven by a motor, either compressed air or electricity. Gunpowder is used in making the blast in wet mines where there is no gas present, but in dry and dusty ones, or where gas is present, it is necessary to use some flameless high explosive, which in exploding discharges an aqueous vapor that destroys any tendency to ignite coal dust or gas, if present.

Hauling. Coal is hauled from the workings to the shaft by hand labor, horses, or mechanical power; hand labor, obviously, is used only in small mines. Mechanical power systems are: (1) the jig or self-acting incline, feasible only where the shaft's bottom is at the lowest point of the coal seam, in which case the cars loaded with coal running down the incline pull up the empty ones, the wire rope attached to the descending load being fastened over a pulley or drum at the upper end of the incline and its other end attached to the returning empty cars. Friction rollers set at intervals between the rails on the incline carry the rope. Where a double line of rails cannot be used, the single track is provided with a pass half-way where the descending and ascending cars meet and pass. Sometimes a single line is employed throughout, when a balance weight runs between the rails alternately, being drawn up by a loaded cars and drawing up an empty one. (2) Single rope haulage is employed where the shaft's bottom is at the top of an incline; in this case the full cars are hauled up by a winding engine and the empty set run back by gravity. The most generally used system is the endless rope which is adapted not only to level seams but may be advantageously used on steep roads. Usually, a double line of road is better. The cars run in sets of ten or twelve, and a stretching pulley is used to

keep the rope taut when the pull of the load lessens. The endless chain system requires a double roadway, one of which accommodates the full cars and the other the empty. The chain passes over a pulley driven by an engine so placed that the chain rests on the top of the car and passes round a second similar pulley at the far end of the plane. The endless rope system overhead is substantially similar to the endless chain plan. Main and tail rope haulage is employed where the incline is insufficient or not uniform, and a second rope is needed to haul back the empty cars. One road only is required, as in the case of single rope haulage. A second rope, the tail rope, supplements the main rope that runs direct from the engine drum to the head of the loaded cars; the tail rope runs from a drum on the same shaft as the main rope drum, along the side of the roof or roadway, and passes around a return pulley at the end of the road to the end of the set of loaded cars. This rope draws back the empty cars as the main rope hauls in the loaded ones. Besides these methods underground haulage is done in the United States and in Europe in mines where mine roadways are flat or have only slight inclines by locomotives operated by compressed air, electricity and internal combustion. In the case of seams too shallow to admit of using cars for hauling, conveyors are used, operated by compressed air or electricity; these conveyors are low wagons jointed in sections, from which the coal is discharged into cars at the bottom of the shaft.

Raising the Coal to the Surface from the bottom of the shaft on the arrival of the cars from the workings is effected by running them into the cage over rails to which they are locked. The cage is constructed of a framework of vertical iron or steel bars and has a top bar to which the hoisting rope is attached. The cage is provided with a deck or decks, in some cases as many as five, and each deck will hold two cars. The cage runs within guides of wood or other material affixed to the walls of the shaft; sometimes four guides are used, but more frequently three, two on one side of the shaft and one on the opposite side, placed intermediate as related to the guides on the wall facing. By some managers only two guides are provided, which they consider safest. The hoisting is effected by means of wire rope of steel, with a diameter of about two inches; this rope is attached by tackling chains to the cage. The hauling or drawing rope is carried over a head gear or pulley frame at the top of the shaft and then around a drum of like diameter driven by the winding engine. This gear or frame is from 80 to 100 feet above the surface level to give head room to the cage, the landing platform being generally placed at some height above the ground. The head gear is provided with automatic devices to avoid disaster, such as detaching hooks that operate in case of overwinding; safety catches are also furnished to hold the cage should it get out of control or become detached from the rope. On reaching the platform at the top of the shaft the cars move by gravity to a weighing machine and then to the 'tipple,' a cage turning upon a horizontal axis that is devised to discharge the load in the first half of the rotation and restores the car to its normal position in the second, after which it is drawn by an endless chain, or creeper, fitted with grips or hooks, to the cage, to resume its trip to the workings.

Ventilation is one of the most important of the problems with which coal mine operators have to grapple. Not merely has the impure air to be drawn from the the workings, but the possible presence of gases must be considered. Ventilation is obtained by keeping in movement in the same direction a large volume of air which is brought from the surface by the 'downcast' and is carried out of the workings by the 'upcast' shaft. To effect this, powerful mechanical means are needed. The method principally used is exhaustion by machinery. It is sometimes done by the rarefaction of the air in the 'upcast' shaft by means of a furnace at the bottom of the shaft. The furnace may be worked by the return air where there is no gas, but it is far better to take fresh air directly from the 'downcast,' and never must the return air from a fiery mine be allowed to reach the furnace.

Ventilation by exhaustion is conducted by two methods, direct exhaustion and centrifugal displacement of the air to be removed. The latter is more generally adopted, as the weight of the machines required by the former results in too slow a rotation. This method drives the heated air at the bottom of the shaft forward and upward through it, through the pressure of the colder air behind it. In centrifugal displacement, fans are placed at the top of the 'downcast' shaft in some cases. There are several kinds of centrifugal fans, but the main essential is to secure great speed with a minimum of weight and size. In furnishing an indispensable volume of fresh air to the workings at all times, calculations must include the presence or absence of gases. In order that all the workings may be supplied with fresh air, it becomes necessary to split or divide the current at different

points in its path and convey it directly to the places where it is needed. It is further necessary to prevent the mixing of an intake current with a return current; this is done by passing one current over the other by means of an air-crossing, and providing temporary partitions, 'brattices,' constructed with wood or with wood and cloth, in cases where the intake and return airways pass along the same passage, thus separating the currents. Where the workings reach great distances from the shaft, very powerful ventilating fans must be used to overcome air resistance and from 250 to 500 H. P. engines are employed.

Lighting fills an important part in the operation of collieries. In mines that are free from gas naked lights may be used; oil lamps are commonly used in some parts of Europe, but electricity is fast displacing it.

Gas constitutes a great hazard to workers in coal mines. Explosions due to a sudden release of stored-up gas in coal masses, 'blowers' as they are called, are often given off at high tension and are too great for dilution by the ventilating current. Methane, marsh gas, or fire-damp, is the chief gas to be provided against. When diluted in from four to twelve times its volume of atmospheric air, it is explosive, but it burns quietly when the air dilution is greater or less than the proportions mentioned. Coal dust also constitutes a serious danger in dry mines. Although it is not likely to be ignited by a naked light or flame, it may explode, even, though not usually, in the absence of gas. Against such dangers constant precaution is exercised, and protective measures are always under consideration.

Pumping. In different mines the pumping of the water is of greater or less concern, depending on the depth of the workings. To keep the workings free of water it is drawn off into the shafts and from there pumped to the surface. Where, however, there is but a small quantity it is raised in tanks operated with the cage or independently of it. Sometimes the water is removed by syphoning, but this method, as well as that by tank removal, is quite unimportant in comparison with the method of continuous pumping. For this purpose an engine at the surface operates rods that pass down the shaft to the pumps, or the water may be forced to the surface by means of steam, compressed air, hydraulic pressure, or electric pumps set at the bottom of the shaft. To bring the water from the workings to the shaft's bottom pumps are also employed, of which there are several designs.

For the transmission of power to the workings use is made of steam or compressed air, or water under pressure in pipes, electricity, or wooden or iron rods. Steam power is generally used, however, to operate the winding and hauling machinery, but it is less advantageously used in transmitting underground power. Compressed air is a desirable agent for cutting, drilling, hauling and pumping machines, but it offers the disadvantages of greater cost and low efficiency. Hydraulic pressure is made use of also in underground pumping as a means of transmitting power. A system of endless wire ropes or chains operated from the surface has likewise been used for underground hauling, as well as to operate dynamos and drive ventilating fans. But electricity is displacing other powers for underground work, as well as for ventilating, lighting and hauling. It has its drawbacks in the liability of sparking at the motor and of short circuiting, but experience and care minimize these and its employment is rapidly extending in colliery working.

Grading. As the coal leaves the tipple it falls on screens which sort it into various sizes, after which it is carried on a long travelling belt, three to five feet wide, and is then sorted by hand and the waste removed. The grades usual in the American market are: rice, pea, chestnut, stove, egg, broken and steam sizes. There are also buckwheat, which is smaller than pea, and cherry, which is larger. Coal is sometimes put through a washing process, which is effected by conveying it by bucket-elevator to a stream of water, or by passing a stream of water through and over the coal which has been placed in a trough or tank. By this means the dirt, being heavier, sinks to the bottom, while the coal passes away with the water.

The most extensive coal fields in the world are located in the United States. Its distribution in quantities of commercial value extends to twenty-eight States and the Territory of Alaska. Anthracite is produced only in Pennsylvania, New Mexico and Arizona, the last two furnishing only about 100,000 tons per year. The States in which bituminous coal is worked are: Alabama, Arkansas, California, Colorado, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Maryland, Michigan, Missouri, Montana, New Mexico, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Tennessee, Texas, Utah, Virginia, Washington, West Virginia and Wyoming. The chief producing of these are Pennsylvania, yielding over one-third of the total production, West Virginia, over one-seventh, Illinois, nearly one-ninth, and Ohio, nearly one-twelfth,

the last three together yielding a little over nine-tenths of the product of Pennsylvania. The total, in long tons, of anthracite yielded by Pennsylvania in 1915 was 79,459,836, and in value, $184,653,498. The aggregate output in the United States of bituminous in the same year included brown coal and lignite, and the small output of anthracite outside of Pennsylvania was 442,626,426 short tons, of the value of $502,037,688. It may be noted that of the coal-bearing formations in the four great producing States mentioned, Illinois possesses about 42,000 square miles, West Virginia, 17,000, Pennsylvania, 15,800, and Ohio, 12,000, together about 87,000 out of a total coal-bearing area in the United States of about 260,000 square miles, and that their annual output is over two-thirds of the total yield of the United States. The other important producing States are Indiana, about 16,000,000 tons, Alabama, 14,000,000, Kentucky, 13,000,000, Colorado, 10,600,000, Iowa, 7,000,000, Wyoming, 6,700,000, Tennessee, 6,300,000, and Virginia, 5,800,000.

Comparing the yield of the United States with that of Europe, it will be seen that Great Britain only approaches with a total of 300,000,000 tons in 1914, while Germany furnished in the same year 175,000,000 tons. France, Russia and Belgium each have large coal-bearing areas, the product of which has been of great importance in contributing to their manufacturing and industrial progress. China, Japan and India also contain large coal fields, in all almost equal to the coal-bearing area of the United States. Discussions are frequently recurring as to the period of exhaustion of the coal supply. In the United States, broadly speaking, the resources are so great that such a crisis need not be very seriously considered. But in Europe, where the reserves are so much less, the subject has created serious discussion and official investigation.

Coal-plants, such plants as have by their remains formed coal, chiefly allied to the ferns, lycopods, and horse-tails. See *Coal.*

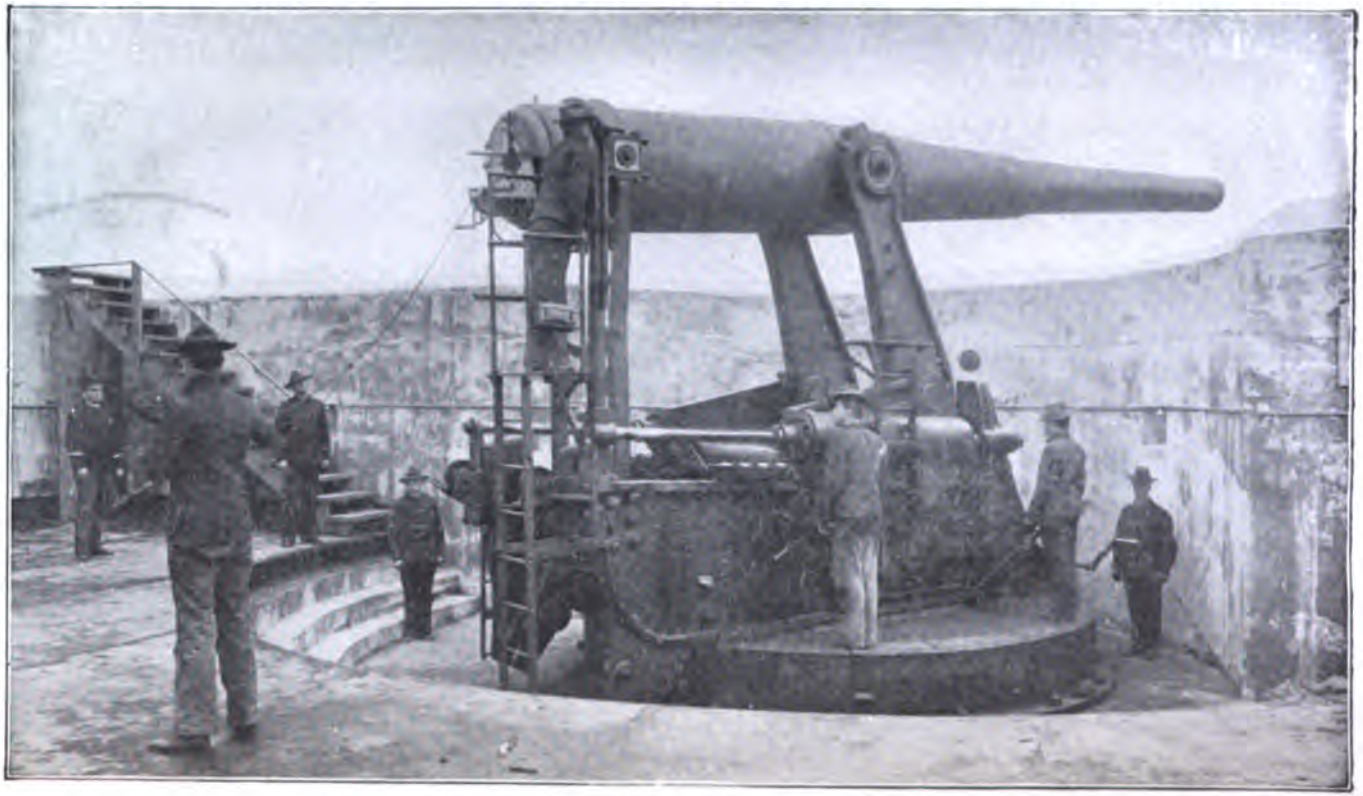
Coal Tar, or GAS-TAR, a substance obtained in the distillation of coal for the manufacture of illuminating gas, a dark-colored more or less viscid mass, consisting principally of oily hydrocarbons. It passes over with the gas into the condensers along with ammonia liquor, but being heavier than the latter, it is easily separated from it when the whole is allowed to stand. It was formerly of comparatively little use; but in recent years a great number of valuable products have been derived from it by distillation, such as ammonia, naphtha, creosote, carbolic acid and benzene, while it is also the source of the whole series of aniline colors, and other dyes, of alizarine, salicylic acid, etc.

Coanza (kō-an'za), a large river of West Africa, entering the Atlantic near 9° 10′ S.

Coast Artillery, the term applied to guns of heaviest caliber, used for the armament of permanent works, chiefly on the seacoast. Their carriages do not subserve the purposes of transportation. Four systems of mounting are used with such artillery, i. e., the *disappearing-*, the *turret-*, the *barbette-* and the *mortar-carriage.*

In the United States these guns constitute the only system of permanent fortification. For purposes of administration and instruction the coast artillery of the continental United States is organized into three districts—the North Atlantic, including all the forts from Maine to New York harbor, inclusive; the South Atlantic, including those from Delaware Bay to Texas, inclusive; and the South Pacific, including those from California to Washington, inclusive. These districts are commanded by colonels of the Coast Artillery Corps or by brigadier-generals appointed from that branch of the U. S. A. The forts of each harbor are grouped into commands called Coast Defenses, each designated by the name of the harbor on which located. In the outlying possessions of the United States the seacoast forts are organized into separate coast defenses. The Coast Artillery Corps is that part of the U. S. A. which is engaged in serving the seacoast guns.

Coast Defense, the systematic protection of a country against hostile attack along its coast-lines. In providing such defense a nation will consider not only the safety of its territory, but also the security of its commercial interests. In any system of coast defense a good navy is the most important feature; and so essential is it considered, that all other means are regarded as adjuncts or auxiliaries of the navy. Along a well-defended coast, in suitable places, are stations or points of support where is stored the requisite material for building, equipping, repairing, and supplying naval vessels, and where provision is made for furnishing men when additional force is needed. Forts are built in places where the coast artillery may co-operate with the navy in obstructing the advance of



COAST DEFENSE GUN

A modern 14-inch coast defense gun at Sandy Hook. The gun is mounted on a disappearing carriage, which lowers it out of sight behind the breastworks after firing. This is one of the most powerful guns in the world, firing a projectile weighing 1,000 pounds with a muzzle velocity of 2,300 feet per second, and a range of over ten miles.

an enemy intending to capture a city or to invade the country; where their guns may command the entrance to a harbor or other approach by water; wherever they may cripple the enemy's attack on the defensive fleet, leaving it free to attack the enemy in turn; where forts may assist each other and co-operate in repelling an invasion or preventing a blockade or a bombardment; where minor channels of approach may be closed or guarded, thus enabling the navy to give entire attention to the main channel, etc. Torpedo-boats, harbor-mines and the searchlight are all valuable aids for the forts. The unfortified coast, as well as the land approaches to cities, must be defended in time of war by whatever means are at command. National policy determines the character and extent of coast defense, and long-continued friendly relations with other countries may make extensive protection unnecessary.

The history of modern coast defense in the United States begins with the creation of the Gun Foundry Board in 1884, which was succeeded by the so-called Endicott Board in 1886. In its final report the Endicott Board fully and clearly set forth the general principles governing coast defense, and elaborated a suitable system. The changed conditions since 1886, due to the development of guns, smokeless powder, and all kinds of munitions of war, made it advisable to revise the system of the Endicott Board, and the National Coast Defense Board, composed of distinguished army and navy officers, under the presidency of W. H. Taft, then Secretary of War, was convened. This board, known as the Taft Board, submitted its report early in 1906. The Taft Board recommended the fortification of 29 ports in the United States (7 more than under the plans of the Endicott Board), 6 in the insular possessions, and 2 in the Canal Zone.

Coast Guard Service, U. S., the name applied to the service created by an act of Congress in 1915, merging the Revenue Cutter and Life-saving Services of the United States. In general the duties of the Revenue Cutter Service, which devolved upon the Coast Guard, were: Assistance of vessels in distress; co-operation with the navy when directed by the President; destruction of derelicts and other menaces to navigation; protection of the customs revenue; enforcement of the navigation and other laws governing merchant vessels and motor boats; international patrol of the ice fields in the North Atlantic; regulation and policing of regattas and marine parades; enforcement of laws relating to anchorage of vessels, neutrality, quarantine, and immigration laws; suppression of mutinies on board merchant vessels; protection of game, and the seal and other fisheries in Alaska; suppression of illegal traffic in firearms, ammunition, and spirits in Alaska; medical aid to seamen of the deep-sea-fishing fleets.

Coast and Geodetic Survey, a scientific department of the government of the United States, for the purpose of making geodetic and hydrographic surveys to determine the coast-line; of making charts of harbors and tide waters, and of the bottom of the ocean along the coast; of indicating positions for the erection of lighthouses; and the making of various meteorological and other observations. It extends its observations to all parts of the globe, as serviceable to navigation.

Coast Mountains, COAST RANGE, a range or series of ranges extending along the west of California, Oregon, Washington and British Columbia, at no great distance from the Pacific coast, and rising to the height of 11,000 feet.

Coastwise Trade, or COASTING TRADE, the maritime commerce between ports of the same country, usually limited by law to ships of domestic ownership. The coastwise trade of Great Britain is not so limited, but that of Canada is limited to British-built vessels, and that of the United States to American vessels (vessels built within the United States, forfeited for breach of laws, or captured in war). The coastwise trade of the United States, always of great importance because of the enormous coast-line, was stimulated by the opening of the Panama Canal in 1915.

Coatbridge (kōt'brij), a town in Scotland, Lanarkshire, 9½ miles east of Glasgow. The district abounds in coal and ironstone, and the place is a thriving town, supported chiefly by the ironworks, engineering establishments, etc., in the neighborhood. Pop. (1911) 43,287.

Coatesville (kōts'vil), a borough of Chester Co., Pennsylvania, 38 miles W. of Philadelphia. It has rolling mills, steel plants, silk and woolen mills, etc. Pop. (1920) 14,515.

Coati, or COATI-MONDI (kō'a-ti mun'di), a name of South American plantigrade carnivorous mammals, of the genus Nasua, belonging to the Ursidæ or bears, but recalling rather the raccoon or civets, and having a long proboscis or

snout. They feed on worms, insects, and the smaller quadrupeds.

Coat of Arms. See *Arms* and *Heraldry.*

Coat of Mail, a piece of armor in the form of a shirt, consisting of a network of iron or steel rings, or of small laminæ or plates, usually of tempered iron, laid over each other like the scales of a fish, and fastened to a strong linen or leather jacket.

Cobalt (kō'bąlt; G. *kobalt, kobolt*, the same word as *kobold*, a goblin, the demon of the mines, so called by miners because cobalt was troublesome to miners, and at first its value was not known), a metal with the symbol Co, specific gravity 8.5, of a grayish-white color, very brittle, of a fine close grain, compact, but easily reducible to powder. It crystallizes in parallel bundles of needles. It is never found in a pure state, but usually as an oxide, or combined with arsenic or its acid, with sulphur, iron, etc. Its ores are arranged under the following species, viz., *arsenical cobalt*, of a white color, passing to steel gray; its texture is granular, and when heated it exhales the odor of garlic; *gray cobalt*, a compound of cobalt, arsenic, iron and sulphur, of a white color, with a tinge of red; its structure is foliated, and its crystals have a cube for their primitive form; *sulphide of cobalt*, compact and massive in its structure; *oxide of cobalt*, brown or brownish black, generally friable and earthy; *sulphate* and *arsenate of cobalt*, both of a red color, the former soluble in water. The great use of cobalt is to give a permanent blue color to glass and enamels upon metals, porcelain, and earthenware. Alloyed with molybdenum, chromium and tungsten it is used for cutting tools. See *Stellite.*

Cobalt, a town on Cobalt Lake, Ontario, 75 miles N. of North Bay. It is the richest silver district in the world. The mines are the chief source of the world's supply of cobalt, which occurs abundantly in the silver ores. There are saw and planing mills, concentrators, etc. Pop. 5630.

Coban (kō-vän'), or VERA PAZ, a cathedral city, state of and 90 miles northeast of Guatemala. It is the center of a rich coffee and cane producing region, and a trade in hides, skins, rubber and sarsaparilla. Pop. about 31,000.

Cobbett (kob'bet), WILLIAM, an English writer and politician, was the son of a farmer and publican at Farnham in Surrey, and born there on March 9, 1762. In 1783 he sought his way to London and obtained a situation as copying-clerk to an attorney, but after nine months he enlisted in the 54th Foot, and shortly after went with the regiment to Nova Scotia. His regular habits and attention to his duties soon brought him promotion, and he was sergeant-major when the regiment four years after returned to England (1791). During his service in the army Cobbett had employed all his spare time in improving his education. He now obtained his discharge, married, and proceeded to America to commence as a political writer. Under the signature of 'Peter Porcupine' he wrote papers and pamphlets of a strongly anti-republican tendency. In June, 1800, he sailed for England, and on his arrival started first the *Porcupine*, a daily paper, which had small success, then the *Weekly Political Register*, which soon acquired a great circulation. *The Register* had started as a Tory paper in support of Pitt, but gradually changed its politics till it became known as the most daring and uncompromising of the government's opponents. Three times heavily fined for libel, Cobbett continued his attacks on the government, in consequence of which he deemed it prudent to retreat to the United States (1817), transmitting his articles regularly, however, for the *Register*. In 1819 he returned to England, and made an unsuccessful attempt to get into Parliament for Coventry. About the same period he commenced a series of papers entitled *Rural Rides*, afterwards reprinted, which contain charming pictures of English country scenery, and are among the best of his productions. In 1824-27 appeared his *History of the Reformation*, in which he vilifies Queen Elizabeth and the leading reformers. On the passing of the Reform Bill in 1832 he was returned as member for Oldham, but was indifferently successful in the house. He died June 18, 1835. Cobbett is also the author of a *Parliamentary History of England from the Conquest to 1803; Advice to Young Men and Women; Village Sermons*, etc. He wrote in a pure and vigorous English style, and his writings contain much useful information, and show a sound judgment wherever the matter did not go beyond his strong practical sense.

Cobbold, THOMAS SPENCER (1828-86), an English botanist and anatomist, born at Ipswich, Suffolk county. After a preliminary study of anatomy, he took the regular medical course at the Edinburgh University, graduating in 1851. He was appointed lecturer on botany at St. Mary's Hospital in London in 1857, and later lectured on zoölogy and comparative anatomy at the

Middlesex Hospital. He was lecturer on geology at the British Museum from 1868 to 1873. A chair of helminthology was created for him at the Royal Veterinary College, where he had been professor of botany. He is best remembered for his researches in helminthology—that is, the study of parasitic worms in man and animals. His publications include: *Entozoa, Tapeworms, Human Parasites*, etc.

Cobden (kob'den), RICHARD, an English politician, the 'apostle of free trade,' born in Sussex in 1804; died at London in 1865. After receiving a very meager education he was taken as an apprentice into a warehouse in London belonging to his uncle, and in this situation he rapidly made up for the defects of his education by his own diligence. In 1830, being left by the failure of his uncle to his own resources, along with some relatives he started a cotton manufactory in Manchester, which in a few years was very successful. His first political writing was a pamphlet on England, Ireland and America, which was followed by another on Russia. In both of these he gave clear utterance to the political views to which he continued through his life rigidly to adhere, advocating non-intervention in the disputes of other nations, and maintaining it to be the only proper object of the foreign policy of England to increase and strengthen her connections with foreign countries in the way of trade and peaceful intercourse. Having joined the Anti-Corn-Law League, formed in 1838, it was chiefly the extraordinary activity of Cobden, together with Bright and other zealous fellow-workers, which won victory for the movement. In 1841 Cobden entered Parliament as member for Stockport, and after several years of unwearied efforts at last induced Sir Robert Peel, then prime minister, to bring in a bill for the repeal of the corn laws, a measure which became law in 1846. Next year he was chosen member for the W. Riding of York, a constituency which he represented for ten years. His business, once highly prosperous, had suffered while he devoted himself to the agitation, and as a compensation for the loss he had thus sustained a national subscription was made, and a sum of about $350,000 presented to him. Cobden continued his labors as an advocate of parliamentary reform, economy, and retrenchment, and a policy of non-intervention, in all of which he found a firm and ready ally in Bright, both being strong opponents of the Crimean war. In 1859 he was chosen member for Rochdale, and was offered, for the second time, a place in the government, but again preferred to keep his independent position. He refused also a baronetcy and several other dignities. His last great work was the commercial treaty which he was the means of bringing about between Britain and France in 1860. During his later years he lived a great deal in retirement.

Cobden Club, an association formed about a year after the death of Mr. Cobden, mainly by the influence of Mr. Bright and Mr. T. B. Potter, for the purpose of encouraging the growth and diffusion of those economical and political principles with which Mr. Cobden's name is associated. The Cobden Club has distributed a vast number of books and pamphlets.

Cobija (kō-bē'hȧ), or Puerto La Mar, a seaport formerly of Bolivia, now in the territory of Antofagasta, Chile. Its population has fallen off from about 4000 to less than 500.

Coble, or COBBLE (kob'l), a low, flat-floored boat with a square stern, used in salmon-fishery.

Coblenz (kō'blents; anciently *Confluentes*, from its situation at the confluence of the Rhine and Moselle), or KOBLENZ, a city of Germany, capital of Rhenish Prussia, finely situated on the left bank of the Rhine, in the angle between it and the Moselle, opposite the fortress of Ehrenbreitstein, which, prior to the European war, 1914-18, was one of the strongest places in Germany and capable of accommodating 100,000 men. American troops began the occupation of Coblenz and Ehrenbreitstein December 10, 1918, in accordance with the terms of armistice. The new part of the town is well built with broad streets and fine squares. The palace of the Elector of Treves was later used as a Prussian royal residence. The industries of Coblenz are wines, ships, hats, pianos. Pop. 56,487.

Cobnut, a large variety of the hazelnut.

Cobourg (kō'burg), a port of Canada, province of Ontario, on Lake Ontario, 69 miles E. by N. of Toronto. It is well built, has sundry manufactures, a good harbor, and an increasing trade. Pop. (1911) 5073.

Cobra di Capello (kō'bra di kap'el-lō; that is, 'snake of the hood'), the Portuguese name of the hooded or spectacled snake *Naja tripudians*, which is found in Southern Asia, a closely allied species (*Naja haje*), also called cobra, or asp, being found in Egypt. It is called spectacled snake from a singular marking on the back of the neck, while its other name

is given from the remarkable manner in which it spreads out its skin on the sides of the neck and head when disturbed or irritated, raising the anterior part of its body so as to appear to stand erect, and expanding its hood. So exceedingly poisonous is its bite that in numerous instances death has followed within a few minutes, and under ordinary circumstances a few hours is the longest term where prompt measures have not been taken. But indeed recovery rarely takes place, though injection of potash into the veins is said to be a remedy. In India thousands of natives lose their lives yearly through cobra bites. Its food consists of small reptiles, birds, frogs, fishes (being an excellent swimmer), etc. Its great enemy is the ichneumon. It is one of the snakes that the snake-charmers perform tricks with.

Coburg (kō'börg), a town and state of Germany, now united with Bavaria, formerly capital of the duchy of Saxe-Coburg-Gotha. It lies on the Itz, 106 miles E. by N. of Frankfort-on-Main, and contains the palace of the dukes of Saxe-Coburg-Gotha and an ancient castle where Luther found concealment. It has various manufactures and extensive breweries. In the reconstruction of Germany, in 1918, the inhabitants of Coburg voted in favor of union with the republic of Bavaria; consummated March, 1920. It sends 3 members to the Bavarian National Assembly. Pop. 75,000.

Co'burg, a thin fabric of worsted and cotton, or worsted and silk, twilled on one side, for ladies' dresses, intended as a substitute for merino.

Coburg Peninsula, a peninsula on the north coast of Australia in the Northern Territory of Southern Australia.

Cobweb (kob'web), the web or network spun by spiders to catch their prey.

Coca ((kō'ka), *Erythroxylon Coca*, a South American plant, nat. order Erythroxyleæ. The leaf contains a stimulating anæsthetic, and is chewed by the inhabitants of countries on the Pacific side of South America, mixed with finely-powdered chalk. It has effects somewhat similar to those of opium. A small quantity of it enables a person to bear up against fatigue even when receiving less food than usual; and it prevents the difficulty of respiration experienced in climbing high mountains. Used in excess it brings on various disorders, and the desire for it increases so much with indulgence that a confirmed coca-chewer is said never to have been reclaimed. Coca-leaves depend for their influence on a crystallizable alkaloid called *cocaine* ($C_{17}H_{21}NO_4$), which, besides having effects similar to the leaf, possesses valuable anæsthetic properties. Applied to the skin cocaine has little effect, but applied to mucous membranes in the form of a solution of the hydrochloride, it produces complete local anæsthesia, lasting for about ten minutes. It is much used in operations on the eyes, nose, tonsils and throat, etc. It is also administered hypodermically for such minor operations as the amputation of a finger, etc. The stimulating effect which the drug produces on the brain tends to the formation of the cocaine habit, which completely undermines the nervous system. Stringent laws governing the sale of cocaine have been enacted.

Cocaine (kō-kān', kō'ka-in). See *Coca*.

Coccinella (kok-si-nel'a), the lady-bird genus of insects. See *Ladybird*.

Coccolite (kok'ō-līt). See *Augite*.

Cocco (ko'kō) ROOT, the name for the corms of several plants of the genus *Colocasia* (order Araceæ), used as food in tropical America.

Coccosteus (kok-os'te-us), a genus of fossil fishes of the Old Red Sandstone, having small berry-like tubercles studding the plates of their cranial buckler and body. It differs from Cephalaspis in having its back and belly both covered with a cuirass.

Cocculus (kok'ū-lus), a genus of East Indian menispermaceous plants, consisting of climbers with heart-shaped leaves and small flowers. The species are generally powerful bitter febrifuges. The fruit of the *Cocculus Indicus* forms a considerable article of commerce, and is sometimes added to malt liquors to give bitterness.

Coccus (kok'us), a genus of insects of the order Hemiptera, family Coccidæ, or scale insects. The males are elongated in their form, have large wings, and are destitute of any obvious means of suction; the females, on the contrary, are of a rounded or oval form, about an eighth of an inch in diameter, have no wings, but possess a beak or sucker, by which they suck up the juices of the plants on which they live. At a certain period of their life the females attach themselves to the plant or tree which they inhabit, and remain thereon immovable during the rest of their existence. In this situation they are impregnated by the male; after which their body increases considerably, in many species losing its original form and as-

suming that of a gall, and, after depositing the eggs, drying up and forming a habitation for the young. Some of these insects are troublesome in gardens, plantations, and hot-houses, while others are of great value. For example, kermes, cochineal, lac-lake, lac-dye, and gum-lac are either the perfect insects dried or the secretions which they form. Kermes consist of the dried females of *Coccus ilicis*, found in great abundance upon a species of oak (*Quercus coccifĕra*), a native of the Mediterranean basin, and gathered before the eggs are hatched. It was known as a dyestuff in the earliest times, but has partly fallen into disuse since the introduction of cochineal. Cochineal consists of the bodies of the females of the *Coccus cacti*, a native of Mexico, which feeds on various species of cactus, particularly on one called *nopal* (*Opuntia cochinillifĕra*). See *Cochineal*, *Lac*, and *China Wax*. Spherical bacteria are also called cocci.

Coccyx (kok'siks), in anatomy, an assemblage of small bones constituting the lower extremity of the backbone, consisting of the last four vertebræ, in a rudimentary form, coossified. It is triangular in shape, and convexo-concave. It is the homologue in man of the tail in animals.

Cochabamba (k o c h - a - bam'ba), a town in the interior of Bolivia, capital of the province of Cochabamba, situated in a fertile valley 8435 feet above the level of the sea, with a good trade and considerable manufactures. Pop. 31,014.—The province has an area of 25,288 sq. miles; pop. 540,000.

Cochin (kō'chin), a port of British India, Malabar district, Madras Presidency, on a small island; a picturesque place with many quaint old Dutch buildings. Its harbor, although sometimes inaccessible during the S. W. monsoon, is the best on this coast. Its trade, however, has for some years been declining. Cochin was one of the first places in India visited by Europeans. In 1502 Vasco da Gama established a factory, and soon after Albuquerque built a fort; he also died here in 1524. In 1663 the Dutch took the place, in 1795 the British. Pop. (1901) 19,274. See also next article.

Cochin, a small native state of India, on the S. W. or Malabar coast, connected with the Presidency of Madras, intersected by numerous rapid streams descending from the Western Ghauts, and having several shallow lakes or backwaters along the coast. Chief products: timber and rice. The rajah has to pay $100,000 annually to the Indian government. Area, 1361 sq. miles; pop. (1911) 918,110, of whom about 230,000 were Christians, partly belonging to the Jacobite and Nestorian churches established here in early times. The capital is Ernakolam. Formerly Cochin was the capital, a town on the Travancore estuary, within half a mile of the British town of Cochin (which see).

Cochin-China (k ō ' c h in-chī'na), a country forming part of the peninsula of Southeastern Asia, and formerly regarded as comprising the whole of Anam (which see) and Lower or French Cochin-China. The latter belonged to Anam till, in 1863, a portion of it was finally ceded to France after a war occasioned by the persecution of French missionaries; other portions were gradually acquired, the territory obtained covering 23,082 sq. miles, with a population of 2,968,529. It is now organized in departments, prefectures, subprefectures and cantons. The northern and eastern parts are hilly, but the rest of the territory consists almost entirely of well-watered, low, alluvial land. In the low and wet grounds much rice is grown. In the more elevated districts are grown tobacco, sugar-cane, maize, indigo and betel. Among the other products are tea, gums, cocoanut oil, silk, spices. The climate is hot and unsuited for Europeans. Industrial arts are as yet limited among the natives. But they excel in the use of wood, of which their temples, pagodas, and tombs are built, being ornamented with elaborate carving. They live in villages adjacent to the rivers, which form almost the only means of communication. The only roads at present existing are those connecting Saïgon, the capital, with the principal towns; a railway of 42 miles connects Saïgon and Mytho. The principal export is rice, mainly to China; cotton and silk are also exported. The export and import trade is mostly carried on by British vessels, while the local trade is chiefly in the hands of the Chinese. The French number only several hundreds. The majority of the inhabitants are Anamese. In their monosyllabic language, their religious tendencies towards Buddhism or the system of Confucius and in their social customs they much resemble the Chinese. —Upper Cochin-China is the name sometimes given to the narrow strip of land on the east coast of Anam between the mountains and the sea extending from Tonquin on the north to Champa on the south, or from about 18° to 11° N. See *Anam*.

Cochineal (koch'in-ēl), a dyestuff consisting of the dried bodies of the females of a species of insect, the *Coccus cacti* (see *Coccus*), a native of the warmer parts of America, particularly Mexico, and found living on a species of cactus called the cochineal-fig. The insects are softly brushed off, and killed by being placed in ovens or dried in the sun, having then the appearance of small berries or seeds. A pound of cochineal contains about 70,000 of them. The finest cochineal is prepared in Mexico, where it was first discovered, and Guatemala; but Peru, Brazil, Algiers, the East and West Indies, and the Canary Islands have also entered into this industry with more or less success. Cochineal produces crimson and scarlet colors, and is used in making carmine and lake.

Cochlea (kok'lē-a), an important part of the internal ear, so called from its shape, which resembles that of a snail-shell.

Cochlearia (kok-lē-ā'ri-a), a genus of cruciferous plants, including the horseradish and common scurvy-grass.

Cochrane, JOHN, born in Palatine, New York, in 1813; died in 1898. He studied law, became interested in politics; and was surveyor of the port of New York, 1853-57. During the Civil War he fought as colonel of the 1st United States Chasseurs. In 1864 he was nominated vice-president, and in 1865 became attorney-general of New York.

Cochrane, LORD. See Dundonald.

Cock. See *Fowl.*

Cockade (ko-kād'), a plume of cock's feathers, with which the Croats in the service of the French in the seventeenth century adorned their caps. A bow of colored ribbons was adopted for the cockade in France, and during the French revolution the tricolored cockade —red, white and blue—became the national distinction. National cockades are now to be found over all Europe.

Cockatoo (kok-a-tō'), the name of a number of climbing birds belonging to the family of the parrots, or Psittacidæ, or regarded as forming a distinct family Plictolophidæ or Cacatuidæ. They have a large, hard bill; a crest, capable of being raised and lowered at the will of the bird, commonly white, but sometimes yellow, red, or blue; a tail somewhat longer than that of the parrot, and square or rounded; long wings; and, for the most part, a white plumage, birds are easily tamed, and when domesticated become very familiar. The sulphur-crested cockatoo (*Plictolophus galerita*) of Australia and Tasmania is a favorite cage-bird. So are the white-crested cockatoo (*P. albus*) and Leadbeater's cockatoo (*P. Leadbeateri*), the pink cockatoo, whose crest is barred with crimson, yellow and white. The Kaka of New Zealand (*Nestor meridionālis*) belongs to this family.

Cockatrice (kok'a-tris), a fabulous monster anciently believed to be hatched from a cock's egg. It is often simply another name for the basilisk. See *Basilisk.*

Cockburn (ko'burn), SIR GEORGE (1772-1853), a British naval officer, born in London. He entered the navy while still a boy, serving on the East India, home, and Mediterranean stations. He became a rear-admiral in 1812 and took a prominent part in the war with the United States, assisting in the marauding expeditions that laid waste many towns and villages along the shores of the Chesapeake Bay. He continued his devastating work as far as the Georgia coast and in August, 1814, took part with General Robert Ross (1770-1814) in the sack of Washington following the defeat of the American troops at Bladensburg, Maryland. They burned the capitol and many other public and private buildings. With Ross he made an unsuccessful attempt to take Baltimore. Ross was killed, but Cockburn escaped injury. In 1815 he took Napoleon to St. Helena, remaining as governor of the island till 1816, later becoming one of the Lords of the Admiralty.

Cockburn (ko'burn), HENRY DUNDAS, LORD, a distinguished Scottish judge, was the son of Archibald Cockburn, one of the barons of the Court of Exchequer, and born in 1779. He studied for the Scottish bar, and was admitted a member of the Faculty of Advocates in 1800. He attached himself to the Liberal party, rose to eminence in his profession, and became, under Earl Grey, solicitor-general, for Scotland. He was a good example of the blending of wit, law and learning common enough at the old Scots bar. He died in 1854. His *Memorials of His Time* (published in 1856) is an invaluable record of the social history of Scotland. Not less interesting is his life of his friend Lord Jeffrey, published in 1854.

Cockchafer (kok'chā-fer), a species of lamellicorn beetle, genus *Melolontha*, remarkable for the length of its life in the worm or larva state, as well as for the injury it does

to vegetation after it has attained its perfect condition. The common cockchafer (*Melolontha vulgāris*) is hatched from an egg which the parent deposits in a hole about 6 inches deep, which she digs for the purpose. At the end of about three months the insect emerges as a small grub or maggot, and feeds on the roots of vegetables in the vicinity with great voracity. When full grown it is over an inch in length; it makes its way underground with ease, and commits great devastation on grass and corn. In the fourth year the insect appears as a perfect coleopterous insect—a beetle over an inch long, of a black color, with a whitish down. It usually emerges from the ground about the beginning of May, from which circumstance the English name *May bug* or *beetle* has been given it. In its perfect state it is very destructive to the leaves of various trees.

Cocker (kok'er), a dog of the spaniel kind, allied to the Blenheim dog, used for raising woodcocks and snipes from their haunts in woods and marshes.

Cocker, EDWARD, an English engraver and teacher of writing and arithmetic in the seventeenth century, born about 1631. His work, *Cocker's Arithmetic*, upon which many succeeding treatises were framed, was published in 1677.

Cockermouth (kok'er-mouth), a town of Cumberland, England, at the mouth of the Cocker, 24 miles S. W. of Carlisle, now giving name to a parl. div. of the county. It has an old ruined castle, supposed to have been built soon after the conquest. Thread and tweeds are manufactured; and there are coal-mines in the neighborhood. Cockermouth was the birthplace of the poet Wordsworth. Pop. 1911, 5203.

Cockfighting, an amusement practised in various countries, first perhaps among the Greeks and Romans. At Athens there were annual cockfights, and among the Romans quails and partridges were also used for this purpose. It was long a favorite sport with the British, and the training, dieting, and breeding of cocks for fighting was the subject of many treatises. It is a favorite sport in the island of Cuba, in the Philippine Islands, and some other localities.

Cock-Lane Ghost, an impudent hoax by which many Londoners were deceived in 1762, consisting in certain knockings heard in the house of a Mr. Parsons, in Cock Lane, Smithfield. Dr. Johnson was among those who believed in the supernatural character of the manifestations; but it was found out that the knockings were produced by a girl employed by Parsons.

Cockle (kok'l), a name for the bivalve molluscs of the genus *Cardium*, especially *Cardium edūle*, common on the sandy shores of the ocean, much used as food. The general characteristics are: shells nearly equilateral and equivalvular; hinge with two small teeth, one on each side near the beak, and two larger remote lateral teeth, one on each side; prominent ribs running from the hinge to the edge of the valve.

Cockle. See *Corn-cockle.*

Cockle Stove, a stove in which the fire-chamber is surrounded by air-currents, which, after being heated sufficiently, are admitted into the apartments to be warmed.

Cockney (kok'ni), a nickname for a London citizen, as to the origin of which there has been much dispute. The word is often, but not always, employed slightly as implying a peculiar limitation of taste or judgment. The epithet is as old at least as the time of Henry II.

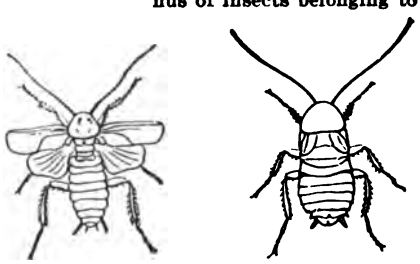
Cock of the Plains (*Centrocercus urophasiānus*), a large North American species of grouse, inhabiting desolate plains in the western States.

Cock of the Rock (*Rupicŏla aurantia*), a South American bird of a rich orange color with a beautiful crest, belonging to the manakin family.

Cock of the Woods. See *Capercailzie.*

Cockpit (kok'pit), in a man-of-war, the place where the wounded were dressed in battle or at other times, and where medicines were kept.

Cockroach (kok'rōch; *Blatta*), a genus of insects belonging to



Common Cockroach, male and female.

the Orthopterous or straight-winged order, characterized by an oval, elongated,

depressed body, which is smooth on its superior surface. They have parchment-like elytra, and in the female the wings are imperfectly developed. They are nocturnal in their habits, exceedingly agile, and devour provisions of all kinds. Cockroaches, like other orthopterous insects, do not undergo a complete metamorphosis; the larvæ and nymphs resemble the perfect insects, except that they have merely rudiments of wings. The eggs are carried below the abdomen of the female for seven or eight days till she finally attaches them to some solid body by means of a gummy fluid. The species are numerous. The *Blatta orientālis*, or common kitchen cockroach (in England commonly called *black beetle*), was originally brought from Asia to Europe, and thence to America, where it is now common. The *Blatta Americāna*, or American cockroach, grows to be 2 or 3 inches long, including the antennæ. Throughout the southern portion of North America and in the West India Islands this species invades houses and is very troublesome.

Cockscomb (k o k s ′ k ŏ m), a name given to flowering plants of various genera. By gardeners it is properly confined to *Celosia cristāta;* but it is popularly applied to *Pedicularis* or lousewort, *Rhinanthus crista-galli* or yellow rattle, as also to *Erythrina crista-galli.*

Cock's-foot, Cock's-foot Grass, a perennial pasture-grass (*Dactylis glomerāta*) of a coarse, harsh, wiry texture, but capable of growing on barren, sandy places, and yielding a valuable food for sheep very early in the spring. It is a native of Europe generally, also of Asia and America. The name has been given to it because of the resemblance of its three-branched panicle to the foot of a fowl.

Cockspur Thorn, the *Crataegus crus-galli*, a North American shrub which has long been cultivated in Britain as a shrubbery ornament. There are several varieties, which are admired for their snowy blossoms in May.

Cockswain (kok′swān; colloquially cok′sn), the officer who manages and steers a boat and has the command of the boat's crew.

Cocles. See *Horatius.*

Cocoa (kō′kō), a name given to the ground kernels of the cacao or chocolate tree prepared to be made into a beverage. See *Cacao.*

Cocoanut or (properly) Coconut, a woody fruit of an oval shape, from 3 or 4 to 6 or 8 inches in length, covered with a fibrous husk, and lined internally with a white, firm, and fleshy kernel. The tree (*Cocos nucifĕra*) which produces the cocoanut is a palm, from 60 to 100 feet high. The trunk is straight and naked, and surmounted by a crown of feather-like leaves. The nuts hang from the summit of the tree in clusters of a dozen or more together. The external rind of the nuts has a smooth surface. This encloses an extremely fibrous substance, of considerable thickness, which immediately surrounds the nut. The latter has a thick and hard shell, with three black scars at one end, through one of which the embryo of the future tree pushes its way. This scar may be pierced with a pin; the others are as hard as the rest of the shell. The kernel incloses a considerable quantity of sweet and watery liquid, of a whitish color, which has the name of *milk.* This palm is a native of Africa, the East and West Indies, and South America, and is now grown almost everywhere in tropical countries. Food, clothing, and the means of shelter and protection are all afforded by the cocoanut tree. The kernels are used as food in various modes of dressing, and yield on pressure an oil which is largely imported into various countries. (See *Cocoanut Oil.*) When dried before the oil is expressed they are known as *copra.* The fibrous coat of the nut is made into the well-known cocoanut matting; the coarse yarn obtained from it is called *coir*, which is also used for cordage. The hard shell of the nut is polished and made into a cup or other domestic utensil. The fronds are wrought into baskets, brooms, mats, sacks, and many other useful articles; the trunks are made into boats or furnish timber for the construction of houses. By boring the tree a white, sweetish liquid called *toddy* exudes from the wound, and yields by distillation one of the varieties of the spirit called *arack.* A kind of sugar called *jaggery* is also obtained from the juice by inspissation.

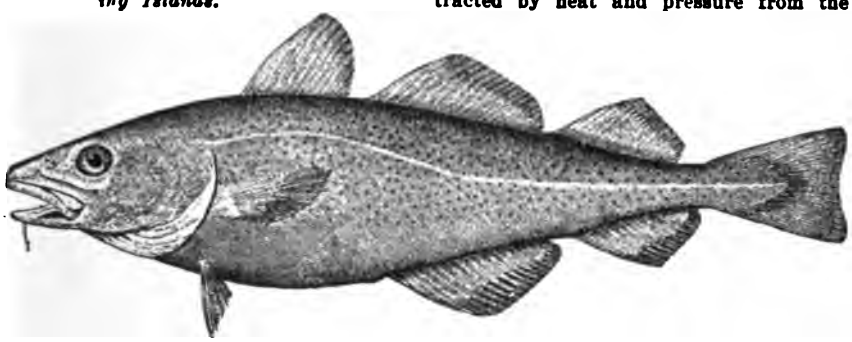
Cocoanut Beetle (*Batocĕra rubus*), a large beetle of the family Longicornes, the larvæ of which inhabit cocoanut trees and eat into the stems.

Cocoanut Oil, a solid vegetable fat, largely used in candle-making and in the manufacture of soaps and pomatum. This fat is got by pressure from the albumen of the cocoanut kernel, and is as white as lard, and somewhat firmer. Manila and Ceylon export large quantities of this useful oil.

Cocoa-plum, the fruit of *Chrysobalanus Icaco* family Rosaceæ, which is eaten in the West Indies. It is about the size of a plum, with a sweet and pleasant though somewhat austere pulp.

Cocoon (ko-kön'), the name given to the web or ball spun by caterpillars before passing into the chrysalis state. The valuable product thus obtained from the silkworm is well known.

Cocos (kok'os) ISLANDS. See *Keeling Islands.*



Codfish (*Gadus morrhua*).

Cocum (kō'kum) BUTTER, COCUM-OIL, a pale, greenish-yellow solid oil obtained from the seeds of *Garcinia purpurea,* a tree of the same genus with mangosteen, used in India to adulterate ghee or fluid butter. It is sometimes mixed with bear's-grease in pomatums.

Cocytus (kō-kī'tus; from Greek *kōkuein,* to lament), a river of ancient Epirus. Also, among the ancient Greeks, one of the rivers of the lower world.

Cod (*Gadus*), a genus of well-known soft-finned fishes, of the same family as the haddock, whiting, ling, etc., distinguished by the following characters:—A smooth, oblong, or fusiform body, covered with small, soft scales; ventrals attached beneath the throat; gills large, seven-rayed, and opening laterally; a small beard at the tip of the lower jaw; generally two or three dorsal fins, one or two anal, and one distinct caudal fin. The most interesting species is the *common* or *bank cod* (*G. morrhua*). Though found plentifully on the coasts of other northern regions, as Britain, Scandinavia and Iceland, a stretch of sea near the coast of Newfoundland is the favorite annual resort of countless multitudes of cod, which visit the *Grand Banks* to feed upon the crustaceous and molluscous animals abundant in such situations, and thus attract fleets of fishermen. Few members of the animal creation are more universally serviceable to man than the codfish. Both in its fresh state and when salted and dried it is a substantial and wholesome article of diet; the tongue is considered a delicacy, and the swimming-bladders or *sounds,* besides being highly nutritious, supply, if rightly prepared, an isinglass equal to the best Russian. The oil extracted by heat and pressure from the liver is of great medicinal value, and contributes considerably to the high economic value of the cod. The cod is enormously prolific, the ovaries of each female containing more than 9,000,000 of eggs; but the numbers are kept down by a host of enemies. The spawning season, on the banks of Newfoundland begins about the month of March and terminates in June; but the regular period of fishing does not commence before April on account of the storms, ice and fogs. The season lasts till the end of June, when the cod commence their migrations. The average length of the common cod is about 2½ or 3 feet, and the weight between 30 and 50 lbs., though sometimes cod are caught weighing three times this. The color is a yellowish gray on the back, spotted with yellow and brown; the belly white or red, with golden spots in young individuals. It is caught by lines and hooks.

Cod, CAPE. See *Cape Cod.*

Coda (kō'da), in music, an adjunct to the close of a composition, for the purpose of enforcing the final character of the movement.

Code (kōd), in jurisprudence, is a name given to a systematic collection or digest of laws. The following

are the chief codes which have affected the laws of Europe: The Theodosian Code (*Codex Theodosianus*), a compilation executed in 429 by a commission on behalf of Theodosius the Younger, and promulgated as law throughout the eastern and western empires. The Justinian Code (*Codex Justinianus*), a code compiled in 528, in the reign of the Emperor Justinian, incorporating all the codes, rescripts, edicts previously in use (see *Civil Laws*). The *Code Napoléon*, or *Code Civil*, undertaken under the consulship of Napoleon by the most eminent jurists of France, and published in 1804. The Code Napoléon (under which name other four codes of commercial law, criminal law, penal law, and law of procedure, drawn up at the same time, are often included) was a code in the strictest sense, that is, not merely a collection of laws, but a complete and exclusive statement of the law, virtually amounting to a recasting of the laws of the country. In this country one of the most complete codes which has been enacted is that of Louisiana, made after its cession to the United States and superseded by a new one in 1824. In the way of revision of existing law an admirable example is that of the Revised Statutes of the State of New York, which started the inauguration of a widespread reform in jurisprudence, extending to England, India, Australia, and most of the American States. The principal reforms were the abolition of the distinction between legal and equitable practice, and the simplification of procedure in general. Congress has a committee engaged in a codification of United States laws.

Codeine (kō-dē'in; Gr. *kōdeia*, a poppy-head), a crystallizable alkaloid obtained from opium, in which it exists to the amount of 6 or 8 oz. per 100 lbs. It is used to produce sleep and to soothe irritable coughs; and is sometimes the chief remedy in diabetes; dose, ¼ grain and upwards to 1 grain. It is a poison in excessive doses.

Codetta (ko-det'a), in music, a short passage which connects one section with another.

Codex (kō'deks), an ancient written book; an important ancient MS., as one of the Scriptures or of some classical writer. A collection of laws was also called *codex*, as Codex Theodosianus, Codex Justinianus (see *Code*).—*Codex Alexandrinus*. See *Alexandrian Version*.—*Codex Sinaiticus*, a very ancient and valuable manuscript of the Greek Septuagint version of the Old Testament (including the Apocrypha), the whole of the New Testament, the Epistle of Barnabas, and a part of the Shepherd of Hermas, discovered in the monastery of St. Catherine, on Mount Sinai, by Tischendorf, in 1859, and now at St. Petersburg. It is written on parchment in four columns, in early uncial characters, and bears every mark of being of great antiquity, perhaps even older than the Vatican MS. It is assigned by Tischendorf to the fourth century. The Old Testament is defective, but the New Testament is complete, not a word being wanting, which is the more remarkable inasmuch as it is the only manuscript of the New Testament which is complete, being from this and its early life of the highest value. It has been published in facsimile.—*Codex Vaticanus*, an ancient Greek MS. of the Old and New Testaments, so called from being contained in the Vatican Library at Rome. It is written on thin vellum, in small uncial characters. The manuscript is assigned to the fourth century, and until the discovery of the Sinaitic was regarded as the best manuscript of the Old and New Testaments. The greater part of Genesis in the Old Testament, and the whole of the pastoral epistles and the Revelation in the New Testament are wanting. A facsimile of it was published in 1868.

Codex Medicus, a publication, of a periodical character, containing a list of therapeutic agents, methods of manufacture, etc. There are several now published, some relating to a specialty in medical science and art. The name of the French pharmacopœia.

Codicil (kod'i-sil), in law, a supplement to a will, to be considered as a part of it, either for the purpose of explaining or altering, or of adding to or subtracting from the testator's former disposition. A codicil may not only be written on the same paper or affixed to or folded up with the will, but may be written on a different paper and deposited in a different place. In general the law relating to codicils is the same as that relating to wills, and the same proofs of genuineness must be furnished by signature, and attestation by witnesses. A man may make as many codicils as he pleases, and, if not contradictory, all are equally valid.

Codilla (ko-dil'a), the coarsest part of hemp, which is sorted out by itself; also, the coarsest part of flax.

Codlin (kod'lin), CODLING, a name for several varieties of kitchen apple with large or medium-sized fruit.

Codling-moth, a small moth the larva of which feeds on the codling apple.

Cod Liver Oil, an oil extracted from the livers of different kinds of cod—the *Gadus morrhua* (common cod) being specified in the pharmacopœia—and allied species. The finest and palest oil is got from fresh and carefully-cleaned liver, the oil being extracted either in the cold or by a gentle heat. The darker kinds are got at a higher temperature, and often from the livers in a putrefying state. Only the pale oils are used in medicine; the dark oils are too rank and acrid, and they are only used in dressing leather. Cod-liver oil is a somewhat complex substance, but the main ingredients appear to be olein and margarin. Acetic, butyric and phosphoric acids, iodine, bromine and phosphorus are also present, and to these the oil may owe some of its odor. This oil is now a recognized agent in the treatment of rheumatism, gout, scrofula and especially of consumption, being taken internally and containing easily-assimilated nutritive matter.

Codogno (ko-dō'nyō), a town in North Italy, province of Milan, in a fertile district between the Po and Adda, with a large trade in Parmesan cheese. Pop. 10,033.

Codrus (kō'drus), according to Greek legend the last king of Athens. Having learned that the enemies of his country would be victorious, according to the declaration of an oracle, if they did not kill the Athenian king, he voluntarily entered their camp, provoked a quarrel and was slain. The grateful Athenians abolished the royal dignity, substituting that of archon, esteeming no one worthy to be the successor of Codrus.

Cody, WILLIAM FREDERICK, scout and showman, known as 'Buffalo Bill,' born in Scott county, Iowa, in 1845; became a pony express rider and a government scout and guide (1861–65). During the construction of the Kansas Pacific Railroad he contracted to furnish the laborers with meat and killed in eighteen months (1867–68) over 4000 buffaloes. Subsequently he engaged in a great number of Indian fights, and in 1883 produced and toured with his 'Wild West Show.' Author of several books. He died January 10, 1917.

Coefficient (kō-e-fi'shent), in algebra, a multiplier of a quantity. Thus in the expression $3ax$ we should understand as the coefficient of x, $3a$, and as the coefficient of ax, 3.

Coehorn (kō'horn), MENNO, BARON VAN, a Dutch military engineer, born 1641; died 1704. Having entered the Dutch military service he distinguished himself by his invention of small mortars, called after him *coehorns*, but more by his eminence as a master of the art of fortification, whence he has been called the Dutch Vauban. He fortified almost all the strong places in Holland.

Coel. See *Aligarh*.

Cœlenterata (sē-len-tėr-ā'ta; Gr. *koilos*, hollow, *enteron*, an intestine), a subkingdom of animals, including those whose alimentary canal communicates freely with the general cavity of the body ('the somatic cavity'). The body is essentially composed of two layers or membranes, an outer layer or 'ectoderm' and an inner layer or 'endoderm.' No circulatory organs exist, and in most there are no traces of a nervous system. Peculiar stinging organs or 'thread-cells' are usually, if not always, present, and in most cases there is a radiate or starlike arrangement of the organs, which is especially perceptible in the tentacles, which are in most instances placed round the mouth. Distinct reproductive organs exist in all, but multiplication also takes place by fission and budding. The Cœlenterata are divided into two great sections, the Actinozoa and the Hydrozoa, and include the medusas, corals, sea-anemones, etc. They are nearly all marine animals.

Cœlestin (sē-les'tin). See *Celestine*.

Cœle-Syria (sē'le sir'i-a; that is, 'Hollow Syria'), the large valley lying between the Lebanon and Anti-Lebanon mountain ranges in Syria. Near its center are the ruins of Baalbek.

Coethen, or KÖTHEN (keu'ten), a town of Anhalt, Germany, 80 miles S. W. of Berlin. Beet sugar is the main industry. Pop. 22,083.

Cœur d'Alene (kėr dȧ-lān'), a city, county seat of Kootenai Co., Idaho, 33 miles E. of Spokane, Washington, on Lake Cœur d'Alene. It is the seat of Cœur d'Alene College and has large lumber and farm interests, also brick yards. Pop. 6473.

Coffee (kof'ē), is the seed of an evergreen shrub which is cultivated in hot climates, and is a native of Abyssinia and of Arabia. This shrub (*Coffëa Arabica*) is from 15 to 20 feet in height, and belongs to the Rubiaceæ. The leaves are green, glossy on the upper surface, and the flowers are white and sweet-scented. The fruit is of an oval shape, about the size of a cherry, and of

a dark-red color when ripe. Each of these contains two cells, and each cell a single seed, which is the coffee as we see it before it undergoes the process of roasting. Great attention is paid to the culture of coffee in Arabia. The trees are raised from seed sown in nurseries and afterwards planted out in moist and shady situations, on sloping grounds or at the foot of mountains. Care is taken to conduct little rills of water to their roots, which at certain seasons require to be kept constantly moist. When the fruit has attained its maturity cloths are placed under the trees, and upon these the laborers shake it down. They afterwards spread the berries on mats, and expose them to the sun to dry. The husk is then broken off by large and heavy rollers of wood or iron. When the coffee has been thus cleared of its husk it is again dried in the sun, and, finally winnowed with a large fan, for the purpose of clearing it from the pieces of husks with which it is intermingled. A pound of coffee is generally more than the produce of one tree; but a tree in great vigor will produce 3 or 4 lbs. The best coffee is imported from Mocha, on the Red Sea. It is packed in large bales, each containing a number of smaller bales, and when good appears fresh and of a greenish-olive color. Next in quality to the Mocha coffee may perhaps be ranked that of Southern India and that of Ceylon, which is strong and well flavored. Java and Central America also produce large quantities of excellent coffee, and Mexico, in one district a crop which ranks with Mocha. Brazilian coffee, though produced much more abundantly than any other, varies very greatly in quality, though its best does not take rank with some of those mentioned. Liberian coffee is esteemed by many. Of the best Mocha coffee grown in the province of Yemen little or none is said to reach the Western markets. Arabia itself, Syria and Egypt consume fully two-thirds, and the remainder is exclusively absorbed by Turkish or Armenian buyers. The only other coffee which holds a first rank in Eastern opinion is that of Abyssinia. Then comes the produce of India, which those accustomed to the Yemenite variety are said to consider hardly drinkable. American coffee holds in the judgment of all Orientals the very last rank. The Dutch were the first to extend the cultivation of coffee beyond the countries to which it is native. About 1690 some coffee seeds were brought to Java, where they were planted and produced fruit. By 1718 the Dutch planters of Surinam had entered on the cultivation of coffee with success, and ten years after it was introduced from that colony by the English into Jamaica, and by the French into Martinique. It was not till 1774 that the planters of Brazil, now the greatest producers of coffee in the world, commenced its cultivation. Coffee as an article of diet is of but comparatively recent introduction. To the Greeks and Romans it was wholly unknown. From Arabia it passed to Egypt and Turkey, whence it was introduced into England by a Turkey merchant named Edwards in 1652, whose Greek servant, named Pasqua, first opened a coffee-house in London. In 1671 an Armenian named Pascal set up a coffee-house in Paris. In Great Britain much less is drunk than on the continent of Europe or in the United States and Canada, tea being the British national beverage, while coffee is the favorite American beverage. The excellence of coffee depends in a great measure on the skill and attention exercised in roasting it. If it be too little roasted it is devoid of flavor, and if too much it becomes acrid, and has a disagreeable, burned taste. Coffee is used in the form either of an infusion or decoction, of which the former is decidedly preferable, both as regards flavor and strength. The fine aromatic oil which produces the flavor and strength of coffee is lost by boiling. The best mode is to pour boiling water through the coffee in a biggin or strainer, which is found to extract nearly all the strength; or to pour boiling water upon it and set it upon the fire, not to exceed ten minutes. Prepared in either way it is fine and strong. In the Asiatic mode of preparing coffee the beans are pounded, not ground; and though the Turks and Arabs boil the coffee, they boil each cup by itself and only for a moment, so that the effect is much the same as that of infusion. In Arabia some additional spicing, generally of saffron or some aromatic seeds, is considered indispensable; but neither Turks nor Arabians use sugar or cream with coffee. Since the middle of the eighteenth century both the culture and consumption of coffee have continually increased. The prin-

Coffee Plant (*Coffea Arabica*).

cipal supply of the United States is derived from Brasil, which furnishes 75 per cent. of the whole import. It is known in commerce as 'Rio.' Coffee acts as a nervous stimulant, a property which it owes mainly to the alkaloid caffeine (which see). It thus promotes cheerfulness and removes languor, and also aids digestion; but in some constitutions it induces sleeplessness headache, and nervous tremblings, particularly after over-indulgence.

Coffee-bug, *Lecanium coffeæ*, an insect of the Coccus family, very destructive in coffee plantations.

Coffer (kof'fer), in architecture, a sunk panel or compartment in a ceiling of an ornamental character, and usually enriched with moldings, and having a rose, pomegranate, etc., in the center.

Coffer-dam, a temporary wooden enclosure formed in water in order to obtain a firm and dry foundation for bridges, piers, etc.

Coffeyville, a city in Montgomery Co., Kansas, on the Verdegris River, 19 miles S. of Independence. It has oil refineries, brick and tile plants, zinc oxide plant, paper and flour mills, sash and door factories, etc. Both electric light and water plants are owned and operated by the city. Pop. 13,452.

Coffin (kof'in), the chest or box in which a dead body is enclosed for burial. Coffins were used by the ancients mostly to receive the bodies of persons of distinction. Among the Romans it was latterly the almost universal custom to consume the bodies with fire, and deposit the ashes in urns. In Egypt coffins seem to have been used in ancient times universally. They were of stone, earthenware, glass, wood, etc. A sort of ancient coffin is known as a *sarcophagus*. Coffins among Christians were introduced with the custom of burying. (See *Burial*.) Modern coffins are usually made of wood.

Coffin, Sir Isaac, admiral, born in Boston, Massachusetts, in 1759; died in 1839; entered the British navy when 14 years old under Sir John Montague, becoming commander in 1782. During the Revolution he remained loyal to the mother country. He founded the famous Coffin School, Nantucket, Mass., 'to be a perpetual tree of knowledge in this sterile spot.' In January, 1899, the foundation was valued at $50,000, and it was decided to allow an emergency fund to accumulate.

Cognac (kon-yak), a town in France, dep. Charente, and near the river Charente, 22 miles W. Angoulême, pleasantly situated on a hill, crowned by the remains of an old castle. It is famous for the brandy which bears its name, and which is exported to all parts of the world. Pop. 18,389.

Cognates (kog'nāts), relations by the mother's side. See *Agnates*.

Cognizance (kog'ni-zans, kon'i-zans), in heraldry, a crest, coat of arms, or similar badge of distinction appertaining to a person or family; in law, judicial or formal notice or acknowledgment of a fact.

Cognomen (kog-nō'men), the hereditary family name (such as Cicero, Cato, etc.) among the ancient Romans. The other two names generally borne by every well-born Roman, viz. the *prænomen* and *nomen* (as in Marcus Tullius Cicero), served to denote the individual (Marcus), and the *gens* (Tullius) or clan to which his family belonged.

Cognovit (kog-nō'vit), in law, is a written confession given by the defendant that the action of the plaintiff is just, or that he has no available defense.

Cog-wheel, a wheel with cogs or teeth.

Coheir, Coheiress (kō-ar', kō-ār'es), a joint heir or heiress, one who succeeds to an inheritance that is to be divided among two or more.

Coheleth. See *Ecclesiastes*.

Cohesion (kō-hē'shun), the force by which the various particles of the same material are kept in contact, forming one continuous mass. Its action is seen in a solid mass of matter, the parts of which cohere with a certain force which resists any mechanical action that would tend to separate them. In different bodies it is exerted with different degrees of strength, and it is measured by the force necessary to pull them asunder. Cohesion acts at insensible distances, or between particles in contact, and is thus distinguished from the attraction of gravitation. It unites particles into a single mass, and that without producing any change of properties, and is thus distinguished from *adhesion*, which takes place between different masses or substances; and from chemical attraction or affinity, which unites particles of a different kind together and produces a new substance. Hardness, softness, tenacity, elasticity, malleability and ductility are to be considered as modifications of cohesion. The great antagonist of cohesion is heat.

Cohesion Figures, a class of figures produced by the attraction of liquids for other liquids or solids with which they are in contact, and divided into *surface, submersion, breath,* and *electric cohesion figures.* Thus a drop of an independent liquid, as oil or alcohol, will spread itself out on the surface of water always in a definite figure, but differing with each fluid dropped on the water. *Breath figures* are produced by putting a drop of the liquid to be examined on a slip of mica, and breathing on it, when each fluid takes a distinct characteristic shape. *Electric cohesion figures* are produced by electrifying drops of various liquids placed on a plate of glass.

Cohobation (kō-hō-bā'shun), the repeated distillation of the same liquid from the same materials.

Cohoes (ko-hōz'), a city of Albany County, New York, on the west bank of the Hudson River, at the mouth of the Mohawk, with great water-power derived from the Mohawk falls. There are large cotton and other mills. Pop. (1920) 22,987.

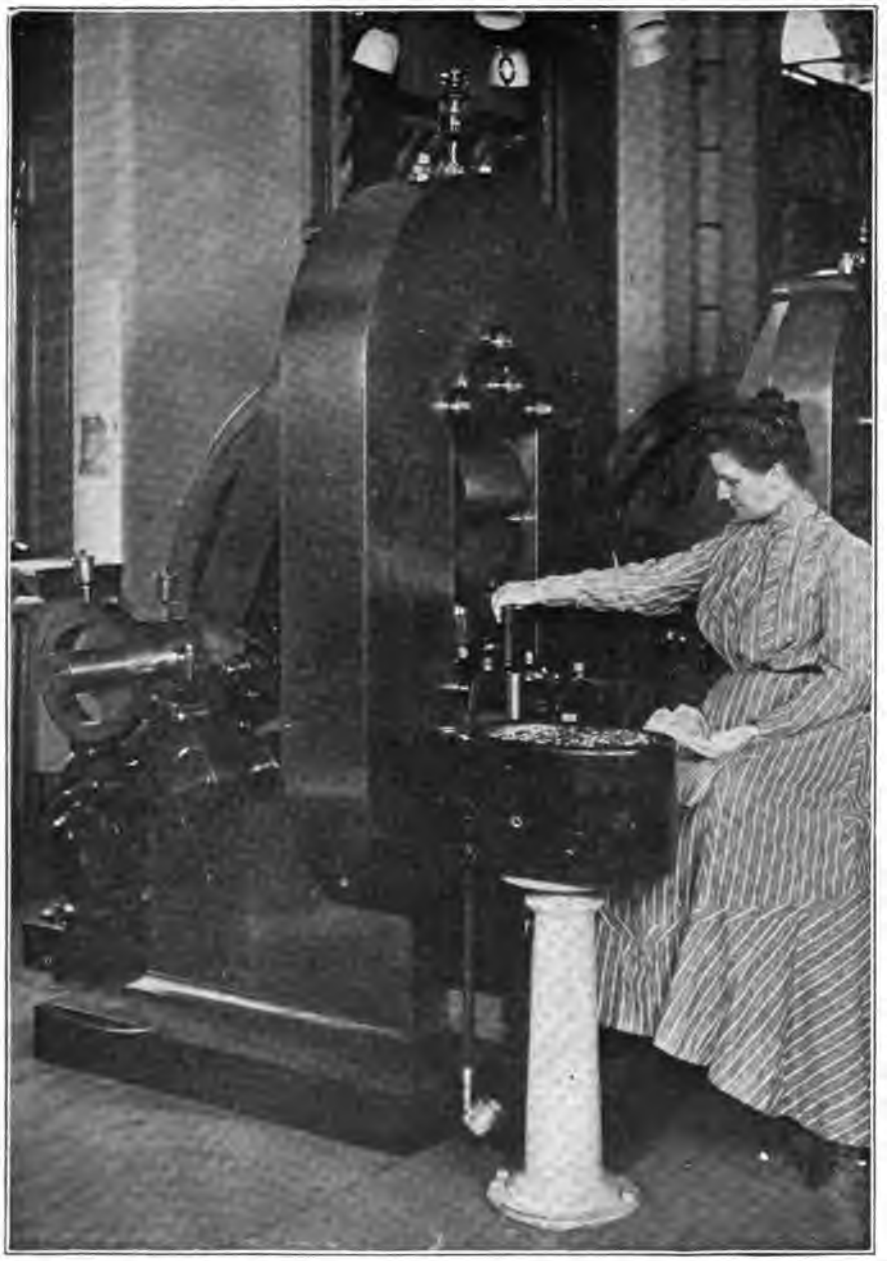
Cohort (kō'hort). See *Legion.*

Coimbatore (ko-im-ba-tōr'), a city of Madras, British India, capital of district to which it gives name, situated on the river Noyil, with wide streets, abundant water, and a healthy climate. Pop. 47,007.—The district is fertile, producing sugar, cotton, rice, and tobacco; and is well watered by several rivers.

Coimbra (kō-ēm'bra), a city of Portugal, capital of Coimbra district (1508 sq. miles; pop. 360,056), in Beira province, on the Mondego River. Seat of the University of Coimbra (founded 1290). It has manufactures of linens, woolens, etc. Pop. 20,581.

Coinage (koin-aj), the system of coins used in a country. The metallic coinage of the United States consists at present of gold double-eagles, eagles, half-eagles, and quarter-eagles; silver dollars, half dollars, quarter dollars and dimes; the nickel five-cent piece and the bronze cent. Under the first coinage act of 1792 the gold eagle weighed 270 grs., 916 2/3 fine. It was reduced in weight to 258 grs. in 1834, and the fineness was changed to 900. The early half-eagle weighed 135 grs., but now weighs 129 grs., 900 fine; the quarter-eagle, 64.5 grs. The silver dollar of 1792 weighed 416 grs., but is now 412½ grs., 900 fine; the half-dollar, 192.9 grs.; the quarter-dollar, 96.45 grs.; the dime, 38.58 grs. The five-cent piece weighs 77.16 grs., 75 per cent copper, 25 per cent nickel. The cent weighs 48 grs., 95 per cent copper.

Coining (koin'ing), the art of converting pieces of metal into current coins for the purposes of commerce, usually performed in a government estabishment called a *mint.* It is one of the prerogatives of the supreme power in all states, and counterfeiting or otherwise tampering with the coin is severely punished. In the United States the Bureau of the Mint was established as a division of the Treasury Department in 1873. It has charge of the coinage for the government and makes assays of precious metals for private owners. The process of converting the precious metals into coins is an interesting one. The rolling machines through which the ingots are passed are adjustable, the space between the rollers being governed by the operator. About two hundred ingots are run through per hour on each pair of rollers. When the rolling is completed the strip of metal is about six feet long. As it is impossible to roll perfectly true it is necessary to 'draw' these strips, after being softened by annealing. The drawing benches resemble long tables, with a bench on either side, at one end of which is an iron box secured to the table. In this are fastened two perpendicular steel cylinders. These are at the same distance apart that the thickness of the strip is required to be. It is drawn between the cylinders, which reduces the whole to an equal thickness. These strips are now taken to the cutting machines, each of which will cut 225 planchets per minute. The press used consists of a vertical steel punch. From a strip worth $1100 about $800 of planchets will be cut. These are then removed to the adjusting room, where they are adjusted. After inspection they are weighed on very accurate scales. If a planchet is too heavy, but near the weight, it is filed off at the edges; if too heavy for filing, it is thrown aside with the light ones to be remelted. The planchets, after being adjusted, are taken to the coining and milling rooms, and are passed through the milling machine. They are fed to this machine through an upright tube, and as they descend are caught upon the edge of a revolving wheel and carried about a quarter of a revolution, during which the edge is compressed and forced up. By this apparatus 560 nickels can be milled in a minute; for large pieces the average is 120. The massive but delicate coining presses coin from 80 to 100 pieces



ELECTRIC COINING PRESS, U. S. MINT, PHILADELPHIA

Woman feeding planchets, or coin blanks, to brass tubes from the bottom of which they are carried to the steel dies which form the coins.

a minute. These presses do their work in a perfect manner. After being stamped the coins are taken to the coiner's room. The light and heavy coins are kept separate in coining, and when delivered to the treasurer they are mixed in such proportions as to give him full weight in every delivery. By law, the deviation from the standard weight, in delivering to him, must not exceed three pennyweights in one thousand double eagles. The coinage of the United States mints since the organization of the government has amounted to nearly 6,000,000,000 pieces, valued at over $4,000,000,000.

Coir (koir), cocoanut fiber, fiber from the husk of the nut, from which are manufactured matting, bagging, ropes and cables. Coir cordage, from lasting well in salt-water, as also from its lightness, strength, and elasticity, is preferable in many respects to ropes of hemp. Mats and matting are now largely made of coir, which is also used in coarse brushes, for stuffing purposes, etc.

Coire (kwär), or CHUR (*hör*), the capital of the Swiss canton of the Grisons, on the rivers Plessur and Rhine. It is irregularly built, and possesses many houses in the ancient style of architecture. Not far from Coire the Rhine begins to be navigable for small vessels. Pop. 11,718.

Coix, a genus of grasses. See *Job's Tears.*

Coke (kōk), the carbonaceous residue of coal which has been heated in an oven or retort, or in any way by which little air is admitted, until all volatile matter has been expelled. The simplest method of producing coke is based on the preparation of wood charcoal, the coal being arranged in heaps which are smothered with clay or coal-dust, and then set on fire, sufficient air being admitted to keep the mass at the proper temperature for decomposition without wasting the coke. After the volatile portions are got rid of, the heap is allowed to cool, or is extinguished with water, and the coke is then ready. Methods of heating the coal in close or open ovens until the gaseous and fluid products are driven off are also commonly used. Gas-coke is that which remains in the retorts after the gas has been given off. Good oven-coke has an iron-gray color, submetallic luster, is hard, and somewhat vesicular; but gas-coke has rather a slagged and cindery look, and is more porous. Coke contains about 90 per cent. of carbon, and is used where a strong heat is wanted without smoke and flame as in smelting. The retort or by-product oven has been recently greatly developed so as to eliminate waste, the yield of coke averaging 75 per cent. the weight of coal used, while in the 'beehive' oven the average is only 65 per cent. Sometimes two kinds of coal are mixed to get a coking combination. Pennsylvania exceeds all other states in the production of coke. The output in 1900 was 13,357,295 short tons; this had risen in 1905 to 20,573,736 short tons, and in 1916 there was recorded the enormous output of 31,279,695 short tons. The total output of the United States for 1916 was about 45,000,000 short tons. The coke produced in British Columbia, in 1916, amounted to 267,725 tons. Nova Scotia's output was 669,478 tons. In Alberta there was a large output from 367 ovens.

Coke, DESMOND (1879-), an English novelist, educated at University College, Oxford. He served in 1915-16 in the European war and was invalided home with the rank of captain. His novels include: *The Pedestal, The Golden Key, Helen Brett's Career, The Worst House at Sherborough.*

Coke, SIR EDWARD, an eminent English lawyer, was the son of a Norfolkshire gentleman and was born in 1551. After finishing his education at Cambridge he went to London, and entered the Inner Temple. His reputation and practice rapidly increased. He was chosen recorder of the cities of Norwich and of Coventry, knight of the shire of his county, and, in spite of the rivalship of Bacon, attorney-general. As such he conducted the prosecutions for the crown in all great state cases, notably those of Essex and Sir Walter Raleigh, which Coke conducted with great rancour and asperity. In 1613 he became Chief-justice of the Court of King's Bench; but his rough temper and staunch support of constitutional liberties brought him into disfavor with King James and his courtiers. In 1621 he was committed to the Tower, and soon after expelled from the privy-council. In 1628 he was chosen member for Buckinghamshire, and greatly distinguished himself by his vindication of the rights of the Commons, and by the proposing and framing the famous Petition of Rights. This was the last of his public acts. On the dissolution of the Parliament he retired to his seat in Buckinghamshire, where he died, September, 1634. His principal works are *Reports*, from 1600 to 1615; *Institutes of the Laws of England*, in four parts; the first of which contains the celebrated commentary on *Littleton's Tenures*

('Coke upon Littleton'); *A Treatise of Bail and Mainprise, Complete Copyholder.*

Col (French, *neck*), an elevated mountain pass between two higher summits. The name is used principally in those parts of the Alps where French is commonly spoken.

Cola. See *Kola.*

Colander (kol'an-der), a vessel with a bottom perforated with little holes for straining liquors.

Colberg (kol'berg), or KOLBERG, a Prussian fortified seaport in Pomerania, on the river Persante, 1 mile from the sea, with a good shipping trade and well-frequented baths. Formerly a regular fortress, it has often been held against strong armies. Pop. 20,200.

Colbert (kol-bâr), JEAN BAPTISTE, a celebrated French minister of finances, born at Rheims in 1619. After serving in various subordinate departments Colbert was made intendant, and at length comptroller-general of the finances. His task was a difficult one. He found disorder and corruption everywhere. The state was the prey of the farmers-general, and at the same time maintained only by their aid. The people were obliged to pay 90,000,000 livres of taxes, of which the king received scarcely 35,000,000, the revenues were anticipated for two years, and the treasury empty. Colbert at once commanded a system of stringent reforms, abolishing useless offices, retracting burdensome privileges, diminishing salaries, and distributing and collecting the taxes by improved methods till he had reduced them almost to one-half. To his talents, activity, and enlarged views the development and rapid progress of industry and commerce in France were largely due. He constructed the Canal of Languedoc; declared Marseilles and Dunkirk free ports; granted premiums on goods exported and imported; regulated the tolls; established insurance offices; made uniform laws for the regulation of commerce, labored to render the pursuit of it well esteemed, and invited the nobility to engage in it. The French colonies in Canada, Martinique, etc., showed new signs of life; new colonies were established in Cayenne and Madagascar, and to support these Colbert created a considerable naval force. Under the protection and in the house of the minister (1663) the Academy of Inscriptions was founded. Three years afterwards he founded the Academy of Sciences, and in 1671 the Academy of Architecture. He enlarged the Royal Library and the Garden of Plants and built an observatory in which he employed Huyghens and Cassini. He began the measurement of the meridian in France, and sent men of science to Cayenne. After having conferred the greatest benefits on his country he died in 1683, out of favor with the king and the people.

Colburn (kol'burn), ZERAH, 'the calculating boy,' born in Vermont, in 1804; died in 1840. Before his sixth year he began to manifest wonderful powers of arithmetical computation, and in public exhibitions astounded learned mathematicians by the rapidity and accuracy of his processes, but the faculty left him when he grew up. After acting as a teacher and itinerant preacher, he was latterly professor of languages at Norwich University, Vermont. Others besides him have possessed this remarkable faculty, which indicates powers in the brain little understood.

Colchester (kol'ches-ter), a borough and river-port of England, County Essex, 51 miles N. E. by E. London, mostly situate on the summit and sides of an eminence rising from the river Colne; well built and amply supplied with water. It has a good coasting trade and employs a great number of small craft in the oyster-fishery. It is a place of high antiquity, there being no place in the kingdom where so great a quantity and variety of Roman remains have been found as here. It is supposed to be the *Camalodunum* of the Romans, and was called *Colne Ceaster*, from its situation on the Colne, by the Anglo-Saxons. Pop. (1911) 43,463.

Colchester, a town (township) of Chittenden Co., Vermont. The town includes Colchester and Winooski villages. Pop. 6450.

Colchicine (kol'chi-sin), an alkaloid obtained from colchicum, used for the alleviation or cure of gout and rheumatism. It acts as an emetic, diuretic, and cholagogue cathartic, and in large doses as a narcotico-acrid poison.

Colchicum (kol'chi-kum), a genus of plants, order Melanthaceæ, allied to the lilies. The *Colchicum autumnale*, or meadow saffron, is a bulbous-rooted, stemless, perennial plant, which grows in various parts of Europe. From a small corm or bulb buried about 6 inches deep, and covered with a brittle brown skin, there rises in the early autumn a tuft of flowers having much the appearance of crocuses, flesh-colored, white, or even variegated. They soon wither, and the plant disappears till the succeeding spring, when some broad

leaves are thrown up by each corm along with a triangular oblong seed-vessel. The plant is acrid and poisonous, and cattle are injured by eating it, but it yields a medicine valuable in gout and rheumatism. See *Colchicine*.

Colchis (kol'kis), the ancient name of a region at the eastern extremity of the Black Sea, resting on the Caucasus, famous in Greek mythology as the destination of the Argonauts, and the native country of Medea.

Colcothar (kol'kō-thar), an impure brownish-red oxide of iron, which forms a durable color, but is most used in polishing glass and metals.

Cold, the absence of sensible heat, especially such a want of heat as causes some discomfort or uneasiness. The temperature in which man and other animals live is generally below the natural heat of the body, but this is easily kept up in ordinary cases by means of the food taken in and digested. A high degree of cold, however, produces bodily depression, and is a frequent source of disease, or even of death. For the ailment called *a cold*, see *Catarrh*.

Cold-blooded Animals, a term applied to those animals, such as reptiles, the temperature of whose blood ranges from the freezing-point, or near it, to 90° Fahr., in accordance with that of the surrounding medium.

Cold Cream, is a white, semisolid, unctuous ointment for dermal application to soothe irritated, excoriated, roughened, or abraded skin and softening hard, harsh, or dry skin. It is composed of spermaceti, expressed oil of olives, white wax, oil of rose, sodium borate and water. The first three ingredients are melted together carefully by the aid of gentle heat, the oil of rose and water are made into rosewater, and with the aid of the sodium borate the two liquids are mixed together and stirred until cold. With it may be incorporated medicinal and coloring substances.

Cold Storage, a method of preserving perishable food materials by keeping them in a low temperature until needed for consumption. This is done by the aid of freezing machines similar in principle to those used in making artificial ice and by which the temperature can be reduced to and kept at the requisite degree. Cold storage warehouses are in use in all our principal cities, in which fruits and meats are kept for long periods, while the unsold material of one market day can be kept unspoiled for another. In transporting perishable material by ship or car the same process is used. Meats thus kept need to be used quickly after being thawed, since they spoil more rapidly than in their original state, and in some cases prove injurious from putrefactive changes.

Coldstream, a village of Scotland in Berwickshire, on the Tweed. When General Monk quartered here in 1659-60 he raised an infantry regiment called *the Coldstream Guards*.

Coldwater, a city, county seat of Branch Co., Michigan, 110 miles w. s. w. of Detroit. It has manufactures of iron, furniture, cement, leather, brass, and a milk condensory. Pop. (1920) 6114.

Cold Wave, the name given in the United States to spells of severe depression of temperature, as that of hot wave is given to the opposite condition. Cold waves are due to persistent winds from the northwest, which spread over the country the chill conditions of the great plains and mountain ranges of Western Canada.

Cole, THOMAS, a landscape painter. He was born in England in 1801, but was taken quite young to America, where he died in 1848. Among his works are the *Voyage of Life*, *Course of Empire*, *Hunter's Return*, *Views in the White Mountains*, etc.

Cole, TIMOTHY, an American wood-engraver, born in London, England, in 1852; came to America with his parents in 1857. He entered the employment of the *Century Magazine* (then *Scribner's*) in 1875, and in 1883 went to Europe, beginning his remarkable series of Old Masters. These represent the work of many years and include Italian, Dutch, Flemish, English, Spanish, French and American masters.

Colebrooke (kōl'brųk), HENRY THOMAS, an Oriental scholar, born at London in 1765; died there in 1837. He became professor of Sanskrit at Calcutta and director of the Bengal Asiatic Society. His translations from the Sanskrit and his essays on Hindu subjects are valuable.

Colenso (kō-len'sō), JOHN WILLIAM, Bishop of Natal, born in 1814; educated at Cambridge; assistant-master at Harrow, till 1842; appointed in 1853 first Bishop of Natal, South Africa. His works on the Pentateuch and Book of Joshua, which called in question the historical accuracy of these books, involved the author in a conflict with his ecclesiastical superiors, and he was deposed by the Bishop of

Cape Town. But the decisions of the privy-council and Court of Chancery were in his favor, and he continued to officiate as bishop. He died in 1883.

Coleoptera (k o-l ē-o p'te-ra; Greek *koleos*, a sheath, and *pteron*, a wing), an order of insects, commonly known as *beetles*. They have four w i n g s, of which the two superior (*e l y t r a*) are not suited to flight, but form a covering and protection to the two inferior, and are of a hard and horny or parchment-like nature. The i n f e r i o r wings, when not in use, are folded transversely under the superior. The coleoptera undergo a perfect metamorphosis. The larva generally resembles a short, thick worm with six legs and a scaly head and mouth.

One of the Coleoptera (*Cicindela campestris*) *a*, Head. *b*, Thorax. *c*, Abdomen. *d d*, Elytra. *e e*, Wings. *f f*, Antennæ.

Coleraine (kōl-rān'), a town of Ireland, county of Londonderry, on both sides of the river Bann, 47 miles N. W. of Belfast. Its trade, chiefly in linen, agricultural produce and provisions, is considerable. There are extensive salmon fisheries. Pop. about 7000.

Coleridge (kōl'rij), HARTLEY, eldest son of Samuel Coleridge, was born at Clevedon, near Bristol, on September 19, 1796. In 1815 he went to Oxford, where, three years after, he took his degree with high honors. Unfortunately he had contracted a propensity for drinking, and was deprived, on account of his intemperate habits, of a fellowship he had obtained from Oriel College. He then left Oxford and took up his residence at London, but later he resided in the lake country, where he occupied himself with literary composition. In verse, his sonnets, and in prose his biographies (*Worthies of Yorkshire and Lancashire* and *Life of Massinger*) are the most important of his works. He died January 6, 1849. His life was written by his brother, DERWENT, born 1800; died 1883. In 1841-64 he was the principal of St. Mark's College, Chelsea, in 1864-80 rector of Hanwell.

Coleridge, SAMUEL TAYLOR, a celebrated English poet and philosopher, was born October 21, 1772, at Ottery St. Mary, Devonshire, of which place his father was vicar. Sent to school at Christ's Church Hospital, to which he had obtained a representation, young Coleridge took little interest in the ordinary sports of childhood, and was noted for a dreamy, abstracted manner, though he made considerable progress in classical studies, and was known even at that early age as a devourer of metaphysical and theological works. From Christ's Church he went with a scholarship to Jesus College, Cambridge, where he remained for two years, but without achieving much distinction. At this time, too, his ultra-radical and rationalistic opinions made the idea of academic preferment hopeless, and perhaps it was partly to escape the difficulties and perplexities gathering about his future that Coleridge suddenly quitted Cambridge and enlisted in the 15th Dragoons. Rescued by his friends from this position, he took up his residence at Bristol with two congenial spirits, Robert Southey, who had just been obliged to quit Oxford for his Unitarian opinions, and Lovell, a young Quaker. The three conceived a project of emigrating to America, and establishing a pantisocracy, as they termed it, or community in which all should be equal, on the banks of the Susquehanna. This scheme, however, never became anything more than a theory, and was finally disposed of when, in 1785, the three friends married three sisters, the Misses Fricket of Bristol. Coleridge about this time started a periodical, the *Watchman*, which did not live beyond the ninth number. In 1796 he took a cottage at Nether Stowey, in Somersetshire, where soothed and supported by the companionship of Wordsworth, who came to reside at Allfoxden, he wrote much of his best poetry, in particular the *Ancient Mariner*, and the first part of *Christabel*. While residing at Nether Stowey he used to officiate in a Unitarian chapel at Taunton, and in 1798 received an invitation to take the charge of a congregation of this denomination at Shrewsbury, where, however, he did nothing further than preach the probation sermon. An annuity bestowed on him by some friends (the Wedgewoods) furnished him with the means of making a tour to Germany, where he studied at the University of Göttingen. In 1800 he returned to England and took up his residence beside Southey at Keswick, while Wordsworth lived at Grasmere in the same neighborhood. From this fact, and a certain common vein in their poetry, arose the epithet of 'Lake School' applied to their works. About 1804 Coleridge went to Malta to reëstablish his health, seriously impaired by opium-eating. In 1806 he returned to

England, and after ten years of desultory literary work, took refuge from the world in the house of his friend Mr. Gillman at Highgate, London. Here he passed the rest of his days, holding weekly conversaziones in which he poured himself forth in eloquent monologues. His views on religious and political subjects had become mainly orthodox and conservative, and a great work on the *Logos*, which should reconcile reason and faith, was one of the dreams of his later years. But Coleridge had long been incapable of concentrating his energies on anything, and of the many years he spent in the leisure and quietness of Highgate nothing remains but the *Table Talk* and the fragmentary notes and criticism gathered together, and edited by his nephew. He died July 25, 1834. The dreamy and transcendental character of Coleridge's poetry eminently exhibits the man. In his best moments he has a fine sublimity of thought and expression not surpassed by Milton; but he is often turgid and verbose. As a critic, especially of Shakespere, Coleridge's work is of the highest rank, combining a comprehensive grasp of large critical principles and a singularly subtle insight into details. Coleridge's poetical works include *The Ancient Mariner*, *Christabel* (incomplete), *Remorse*, a tragedy, *Kubla Khan*, a translation of Schiller's *Wallenstein*, etc.; his prose works, *Biographia Literaria*, *The Friend*, *The Statesman's Manual*, *Aids to Reflection*, *On the Constitution of Church and State*, etc.

Coleridge-Taylor, SAMUEL, a musical composer of Anglo-African descent, born in London in 1875; died in 1912. He studied at the Royal College of Music, and soon began his brief but brilliant career. His works include *Scenes from the Song of Hiawatha*, *The Blind Girl of Castel Cuillé*, *Meg Blane*, *The Atonement*, and *Kubla Khan*. He also composed incidental music for several of Stephen Phillips' dramas. He was the first negro to achieve fame as a creative musician.

Coleseed (kōl'sēd), a name for a variety of cabbage (*Brassica Napus*) and its seed, which is made into oil-cake for feeding cattle.

Colet (kol'et), JOHN, an eminent divine, dean of St. Paul's, and founder of St. Paul's School, London, born in 1466; died in 1519.

Colfax (kol'faks), SCHUYLER, statesman, born at New York in 1823; died in 1885. About 1845 he established at South Bend, Indiana, a weekly paper, the *St. Joseph Valley Register*, an organ of the Whig party, which he edited for many years. He was elected to Congress in 1854 and was at three different times chosen Speaker of the House. In 1868 he received the Republican nomination for the vice-presidency and was elected with President Grant. He served one term.

Colic (kol'ik; from *colon*, a portion of the large intestine), a painful disorder of the bowels, usually of a spasmodic character, unaccompanied by diarrhœa, and presenting itself in various forms. When the pain is accompanied with a vomiting of bile or with obstinate costiveness it is called a *bilious colic;* if with windy distension, it takes the name of *flatulent* or *windy colic;* if with heat and inflammation, it takes the name of *inflammatory colic*, or *enteritis*. There are many other varieties of this complaint, some of which are peculiar to certain occupations or districts, as the *painters' colic* (see *Lead Poisoning*), the *Devonshire colic*.

Coligny (kol-in-yē), GASPARD DE, a renowned Huguenot chief of France, born in 1517, distinguished himself under Francis I and Henry II, who made him in 1552 Admiral of France. After the death of Henry II Coligny took the Protestant side in the religious strifes of the time, and became the head of the Huguenot party. He was generally unfortunate in the battles he fought, but speedily repaired his defeats by prudence and good management. When peace was made Coligny was received with apparent favor at court. But this was only a blind; and on the night of St. Bartholomew's (Aug. 24, 1572) Coligny was basely slaughtered, and his corpse given up to the outrages of the mob.

Colima (kō-lē'mȧ), a town of Mexico, capital of the state of same name, situated in a fertile plain encircled by hills above which rises the lofty volcano of Colima. Pop. 20,698. On the coast about 30 miles s. s. w. of the city is the port, Puerto de Colima, or Manzanillo. The state has an area of 2272 miles; pop. 65,115.

Coliseum (kol-i-sē'um). See *Colosse'um*.

Coll, an island on the west coast of Scotland, off Mull, County Argyle, one of the Hebrides, about 12 miles long and from 3 to 3½ miles broad. A great portion of it is moor, incapable of cultivation; but there are some tracts of light and sandy soil which are tolerably productive. Gaelic is universally spoken. Pop. 643.

Collation (kol-lā'shun), a comparison of one copy or thing

of a like kind with another, especially manuscripts and editions of books.—In canon law, the presentation of a clergyman to a benefice by a bishop who has the right of patronage. In such a case the combination of the act of presentation and institution constitute *collation*.

Collect (kol'lect), a term applied to certain short prayers in the liturgies of various churches. Some of the collects of the English Church are taken from the old Roman Missal, and are supposed to have been written by St. Jerome. Others are still more ancient; while a few have been added after the Reformation. There is a collect for every Sunday in the year, and a corresponding epistle and gospel.

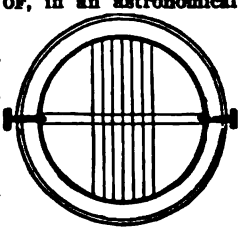
College (kol'ej; Latin, *collegium*), in a general sense, a body or society of persons invested with certain powers and rights, performing certain duties, or engaged in some common employment or pursuit. In Great Britain and America some societies of physicians are called colleges. So, also, there are colleges of surgeons, a college of heralds, etc. The most familiar application of the term college, however, is to a society of persons engaged in the pursuits of literature, including the professors, lecturers, or other officers, and the students. As applied to an educational institution the name is somewhat loosely used. The higher class of colleges are those in which the students engage in study for the purpose of taking a degree in arts, medicine, or other subjects, and are connected with, or have more or less the character of universities. The early history of these institutions is somewhat obscure; the probability is that they were originally founded in the various universities of the middle ages, with similar objects and from the same charitable motives. Hotels or boarding-houses were provided (principally by the religious orders, for the benefit of those of their own fraternity), in which the scholars lived under a certain superintendence, and the endowment of these hostels by charitable persons for the support of poor scholars completed the foundation of a college. Out of this has developed the modern English college as seen at Oxford and Cambridge, where each college, though a member or component part of the university, is a separate establishment whose fellows, tutors, and students live together under a particular head, called *master*, *principal*, *warden*, etc., of the college. In the United States and Germany the college is practically one with the university, the latter body performing all the functions alike, of teaching, examining, degree-conferring, etc.

Collie (kol'i), a variety of dog especially common in Scotland, though now popular among American dog-fanciers, and from its intelligence of much use to shepherds. It is of medium size and varies much in coloring, black and white being common, and black with tan-colored legs, muzzle, etc., being highly esteemed. The head is somewhat fox-shaped, the ears erect, but with drooping points, the tail rather long, bushy and with a pronounced curl.

Collier (kol'yer), JEREMY, an English divine and political writer, born in 1650. He was educated at Cambridge, and having entered into orders obtained the rectory of Ampton in Suffolk in 1659. He was a zealous opponent of the Revolution of 1688, and was repeatedly imprisoned for his political writings. He is chiefly remembered now for his *Short View of the Immorality and Profaneness of the English Stage*—a work of considerable merit which is said to have effected a decided reform in the sentiments and language of the theater. He died in 1726.

Collier, JOHN PAYNE, an English Shakesperian critic, born in London in 1789; died in 1883. He became known as a critical essayist on old English dramatic literature, and was editor of the new edition of *Dodsley's Old Plays* in 1825. In 1831 his best work, the *History of English Dramatic Poetry*, was published. In 1842-44 he published an annotated edition of Shakespere in 8 vols.; in 1844 *Shakespere's Library*. Subsequently he published several editions of Shakespere, and an excellent edition of Spenser (5 vols., 1862). He made himself notorious by claiming that he possessed a copy of the 2d Folio Shakespere, 1632, with many marginal emendations and annotations written in the middle of the seventeenth century, though, as was discovered, these notes were fabrications, probably by himself.

Collimation (kol-i-mā'shun), LINE OF, in an astronomical instrument, such as a telescope or transit instrument, the straight line which passes through the center of the object-glass and intersects at right angles a system of spider-threads placed at



Collimation.

the focus of the eyepiece. The proper adjustment of the line of collimation of the instrument is necessary to accurate observation of the time at which movements of the heavenly bodies take place.

Collimators (kol-i-mā'tors), two small, subsidiary telescopes used for collimating astronomical instruments; that is, for adjusting the line of collimation, and for determining the collimation error.

Collin'. See *Kollin.*

Collingswood (kol'ings-wud), a residential borough of Camden Co., adjoining Camden, with some manufactures. Pop. (1920) 8714.

Collingwood (kol'ing-wud), CUTHBERT, LORD, an English naval commander (1750-1810), born at Newcastle-upon-Tyne. He entered the navy in 1761, and took part as flag-captain on board the *Barfleur* in Lord Howe's victory off Brest, 1794; commanded the *Excellent* during the battle of Cape St. Vincent, 1797; and was made rear admiral in 1799. His most distinguished service was at Trafalgar, where his skill and resolution drew warm praise from Nelson. On the latter's death he took supreme command. He died on board the *Ville de Paris* while cruising in the Mediterranean, and was buried in St. Paul's.

Collingwood, a town and port in Simcoe Co., Ontario, on Georgian Bay. It has great steel shipbuilding yards and dry docks. Manufactures include foundry products, wire nails, brooms, printing, etc. The town owns waterworks, electric light, sewerage and hydro-electric power. Pop. 7700.

Collins (kol'ins), ANTHONY, an English deistical writer, born in 1676; died in 1729. He was a friend of Locke, who described him as a man who had 'an estate in the country, a library in town, and friends everywhere.' His chief works are *Discourse of Free Thinking; Philosophical Inquiry Concerning Human Liberty; Discourse on the Grounds and Reasons of the Christian Religion; Literal Scheme of Prophecy Considered.*

Collins, WILLIAM, an English poet, was born in 1721 at Chichester. While studying at Oxford he wrote his *Oriental Eclogues*, the moderate success of which encouraged him to try a literary career in London. In 1746 he published his *Odes*, containing pieces which now rank among the finest lyrics in the language. Disappointed with the reception his poems met with, and unstrung by irregular habits and excitement, he fell into a nervous melancholy, from which he never quite recovered. He died in 1759.

Collins, WILLIAM, an English painter, noted for his landscapes and domestic scenes, born in London in 1787, and elected Royal Academician in 1820. He died in 1847.

Collins, WILLIAM WILKIE, son of the preceding, born in London in 1824. He was educated for the bar, but turned aside to literature, in which he especially distinguished himself as a novelist of great dramatic and constructive power. Among his best known works are *Antonina* (1850), *Basil* (1852), *The Woman in White* (1860), *The Moonstone* (1868), *The New Magdalen* (1873), *The Evil Genius* (1886), etc. Died 1889.

Collinsville, a city in Madison Co., Illinois, 12 miles E. N. E. of St. Louis. It has coal mines, brick yards, hosiery mills, lead and zinc smelters, etc. Pop. (1920) 9753.

Collision (kol-ish'un), in maritime affairs, the shock of two ships coming into violent contact, whereby one or both may suffer more or less injury. Collision may happen without blame being imputable to either party, as where the loss is occasioned by a storm, in which case the misfortune must be borne by the party on whom it happens to light. Or a collision may arise where both parties are to blame—where there has been a want of due diligence or skill on both sides; in which case neither party has an action against the other. Thirdly, it may happen by the misconduct of the suffering party only and then the rule is that the sufferer must bear his own burden. Finally it may have been the fault of the ship which ran the other down, and in that case the injured party would be entitled to an entire compensation from the other. Strict laws and regulations to prevent collisions have been laid down, which contain rules concerning lights, and sailing and steering rules. By the *rule of the road* at sea, if two sailing ships are approaching each other end on, or nearly so, the helms of both must be put to port, so that each may pass on the port side of the other; in crossing so as to involve risk of collision the sailing ship with the wind on the port side shall keep out of the way of the ship with the wind on the starboard, but if they have both the wind on the same side the ship which is to windward shall keep out of the way of the one that has it to leeward. If a steamship and a sailing ship are approaching, so as to involve collision the former must keep out of the way of the latter.

If one vessel is overtaking another she must keep out of the way of the last-named vessel.

Collodion (ko-lō'di-on), a substance prepared by dissolving pyroxiline (guncotton) in ether, or in a mixture of ether and alcohol, which forms a useful substitute for adhesive plaster in the case of slight wounds. When the fluid solution is applied to the cut or wound it immediately dries into a semitransparent, tenacious film, which adheres firmly to the part, and under it the wound or abrasion heals without inflammation. In a slightly modified form collodion is also employed as the basis of a photographic process called the *collodion process*. See *Photography*.

Colloids (kol'oids), non-crystallizable substances such as gelatine, gum, etc. See *Dialysis*.

Collot d'Herbois (kol-ō dăr-bwä), JEAN MARIE, a leader in the French revolution, born in 1750; died in 1796. He became prominent as a leader of the Mountain or extreme party. He was sent by Robespierre along with Fouché to Lyons in 1793, with almost unlimited powers, and was guilty of the most flagrant enormities. Returning to Paris he became a determined opponent of Robespierre, and being chosen president of the Convention (July 19, 1794), contributed to his fall. He was later banished to Cayenne.

Collusion (ko-lū'shun), in law, a secret agreement between opposing litigants to obtain a particular judicial decision on a preconcerted statement of facts, whether true or false, to the injury of a third party. Collusion, when proved to exist, nullifies the judgment obtained through it.

Collyer, ROBERT, an American Unitarian clergyman, born at Keighly, Yorkshire, England, in 1823, and died in New York in 1912. He learned the blacksmith trade, which he practised for some time after coming to America in 1850. He was at first a Methodist local preacher, but became a Unitarian in 1859. He founded Unity Church, Chicago, and was for many years pastor of the Church of the Messiah, New York. His books include *Nature and Life* (1884), *The Simple Truth* (1878), *Talks to Young Men* (1888), *Things New and Old* (1893).

Colman (kōl-man), GEORGE, an English dramatic writer and theatrical manager, born at Florence in 1733; died in 1794. He is author of *Polly Honeycombe*, *The Jealous Wife*, and *The Clandestine Marriage* (in conjunction with Garrick). From 1777 till 1791 he conducted the little theater in the Haymarket, London.

Colman, GEORGE ('the Younger'), son of the preceding, was born in London in 1762; died there in 1836. He assisted his father as director of the Haymarket Theater, and succeeded him as patentee. His dramas include *John Bull*, *The Heir-at-Law*, *Poor Gentleman* and *Love Laughs at Locksmiths*.

Colmar, or KOLMAR (kōl'mär), a city of Germany, in Upper Alsace, formerly in the French department of Haut Rhin, 39 miles S. S. W. Strasburg. It has manufactures of printed goods, calicoes, silks, etc., besides cotton-mills, tanneries, etc. It was united to France in 1681, and surrendered to Germany by the Treaty of Versailles, February 26, 1871. Pop. (1905) 41,582.

Cöln. See *Cologne*.

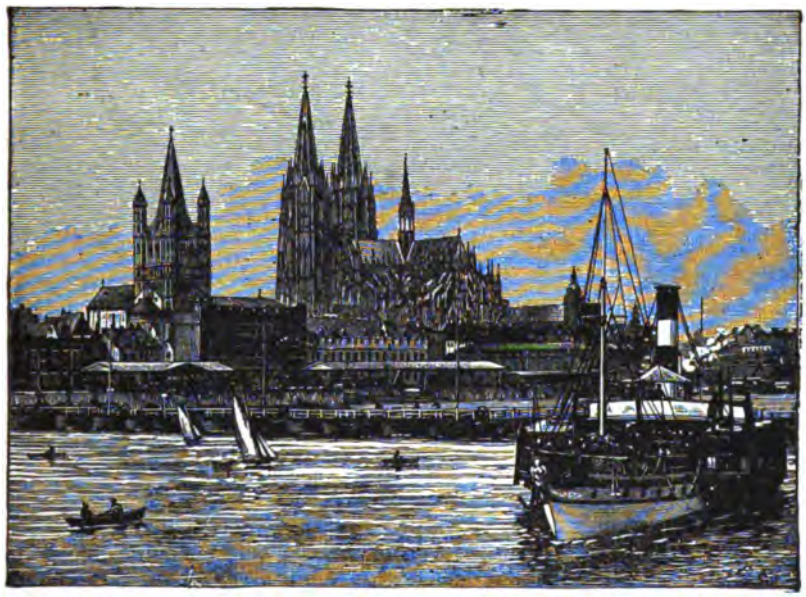
Colne (kōln), a town of England, in Lancashire, 34½ miles N. by E. of the city of Manchester. The chief manufactures are cotton and woolen goods. Pop. 25,693.

Colocasia (kol-ō-kā'si-a), a genus of plants, nat. order *Araceæ*, the leaves and tubers of which are acrid. The latter contain much starchy matter, and they are used as food in the south of Europe after the acrid matter is separated by washing or boiling. *C. esculenta*, *C. macrorhiza*, and others furnish the *taro* of the Pacific islands. See *Cocco Root*.

Colocynth (kol'ō-sinth), the fruit of *Cucumis* (or *Citrullus Colocynthus*), a species of cucumber, the dried and powdered pulp of which is the colocynth of the shops. It is used in medicine as an aperient.

Cologne (ko-lōn'), (changed officially to CÖLN in 1901), German, *Köln* (keuln), a city of Rhenish Prussia, on the left bank of the Rhine, a fortress of the first rank and important commercial city, is 358 miles by rail S. W. of Berlin and 24 miles S. E. of Düsseldorf. The old fortifications, dating from the middle ages, are being, or have been recently, swept away, new works being constructed in accordance with the principles of modern fortification. The town itself has been improved and extended, and streets once dark and filthy have been opened up or otherwise improved, but Cologne is still irregularly built and largely in the antique style. There are many fine old buildings as well as excellent modern ones; the churches in particular are interesting.

The most important edifice of all is the cathedral, begun in 1248, one of the finest and largest Gothic structures in Europe. It was completed only in the 19th century, there being expended on it in 1828–84 over $5,000,000. It is in the form of a cross; its entire length is about 480 feet; breadth, 282 feet; height to ridge of roof, 202 feet; height of the two western towers, between which is a grand portal, 520 feet, being



Cologne, showing Cathedral and Church of St. Martin

thus among the highest edifices in the world. The council-house, museum, and fine St. Martin Church with its imposing tower should also be mentioned. The manufactures embrace sugar, tobacco, glue, carpets, leather, machinery, chemicals, pianos, and the celebrated *eau de Cologne*. The trade by river and railway is very great.—Cologne is of pre-Christian origin, and was originally called *Oppidum Ubiorum*, being the chief town of the Ubii, a German nation. The Romans made it a colony A.D. 51, and called it *Colonia Agrippina* (whence the name *Cologne*). Later it was attached to the Frankish empire, and became one of the most powerful and wealthy cities of the Hanseatic League, but latterly it declined, and its commercial importance was greatly diminished when it was taken by the French in 1794, ceded to them by the Treaty of Lunéville in 1801, and restored to Prussia in 1814. Occupied by Allies, 1918. Pop. 520,000.

Cologne Earth, a kind of ocher, of a deep-brown color, transparent, and durable in water-color painting. It is an earthy variety of lignite or partially fossilized wood.

Cologne Water, AQUA COLOGNIENSIS, EAU DE COLOGNE, SPIRITUS ODORATUS, is a yellowish liquid perfume composed of spirits of wine, and a few drops of various essential oils, so blended as to yield a fine fragrance. It was first produced in Cologne by Jean Farina, in 1709, and is still manufactured there by persons bearing or assuming the same name. Its formula is a secret.

Cologne Yellow, a pigment consisting of yellow chromate of lead, sulphate of lead, and sulphate of lime.

Colombia (kō-lom'bē-ä), REPUBLIC OF, formerly called New Granada, a republic, fourth in size among the countries of South America, consisting of 15 departments, four territories

and a federal district. The population in 1912 was 5,475,691; area approximately 641,000. The chief towns are Bogotá, capital; Medellin, and Cartagena. The territory of the republic formerly included the Isthmus of Panamá, but Panamá declared its independence in November, 1903 and there is much disputed boundary territory in the inland regions towards the south and east. According to surface conformation, the country may be divided into the elevated region of the Cordilleras in the west, and that of the low-lying lands in the east. The former occupies the greater portion of the country, and presents a richly-diversified surface, being formed chiefly of three mountain chains which stretch north and south in a nearly parallel direction, inclosing between them the valleys of the rivers Cauca and Magdalena. These, the two great navigable rivers of the country, flow northwards, joining their waters about 120 miles from their embouchure in the Caribbean Sea. In the central ridge is the culminating point of Colombia, the volcano of Tolima, 18,432 feet high. The low lands of the east form a transitionary region between the plains of North Brazil and the llanos of the Orinoco region, the drainage being carried to the Amazon and Orinoco. The chief coast indentations are small and dangerously exposed bays. The climate is naturally as varied as the surface of the country, there being portions perpetually covered with snow, but over a great part of the republic it is very hot. The rainfall is very heavy on the coast. At some places on the Caribbean Sea, and on the Pacific coast, yellow fever is endemic; but for the most part in the elevated country, as the Plain of Bogotá, 8000 feet above the sea, the climate is perfectly salubrious, and the temperature seems that of eternal spring. The flora is rich and luxuriant. A great part of the country is still covered with virgin forests, which yield excellent building-wood, Peruvian bark, caoutchouc, vanilla, etc. The fauna include the jaguar, puma, tapir, armadillo, sloth, various species of deer, and the gigantic condor. The mineral wealth is various and abundant, though still imperfectly explored. It comprises coal, gold, silver (both now largely worked by foreign companies), emeralds and salt. Industry is at a very low stage. Maize, bananas, and plaintains are the chief articles of food. Tobacco and coffee are cultivated and exported. Sugar-cane is also grown. Manufactures can scarcely be said to exist, Panamá hats, mats, and coarse cotton cloths being almost the only articles that can be mentioned in this class. Chief ports are Barranquilla, Cartagena, and Buenaventura. In 1903 Panama, once a department of Colombia, asserted its independence and was formed into a separate republic. On April 6, 1914, Colombia signed a treaty with the United States agreeing to recognize the independence of Panama, and receiving in return $25,000,000 and certain rights in the Canal Zone. This treaty was ratified by the U. S. Senate on April 20, 1921.

The foreign trade is mostly with Britain and the United States. The exports are mainly coffee, hides, bananas, gold, silver and platinum; the imports consist of foodstuffs, metals, cotton goods and drugs. In 1920 the exports amounted to $80,000,000; the imports to $48,000,000. There are about 900 miles of railroad. The money standard is the *peso* or dollar, nominal value $1.—Colombia is divided into 15 departments, 4 territories and a federal district. The government is carried on by a president, a supreme court, and a legislature consisting of an upper and lower house; the former chosen by electoral colleges, the latter by direct votes. The departments have appointed governors and biennial assemblies. The constitution dates from 1886, with some changes adopted in 1905 whereby the powers of the president were enlarged. The finances of the republic have shown considerable improvement in recent years.—New Granada was discovered by Alonzo de Ojeda in 1499, and it was visited by Columbus in 1502. The natives were Indians, who were practically annihilated by the Spanish conquerors. New Granada declared its independence of Spain in 1811, and after eleven years of warfare succeeded with the help of Venezuela in effecting its liberation. Both states then united with Ecuador, also freed from the Spanish domination, to form the first republic of Colombia; but internal dissensions arising, the three states again separated in 1831, forming three independent republics, which have had a very troubled existence. In 1861 the states forming New Granada by agreement adopted a new constitution, the republic to be called the United States of Colombia. This title was retained till, by the new constitution of 1886, the state ceased to be a federal republic and became a unitary republic with the name of Republic of Colombia. There is a president, supreme court, and legislature of two houses.

Colombo (kō-lom'bō), a seaport town, the capital of Ceylon, on the southwest coast, and about 70 miles west by south of Kandy, with which it is connected by railway. It is a pleasant town with an extensive fort, within which are some of the best houses, and which occupies a projecting point of

land. On the north side of the fort, on the margin of the sea, is the Pettah or Black Town, inhabited chiefly by Singhalese, while in the environs are most of the houses occupied by the English. The public buildings comprise the government offices, government house, supreme court, museum, etc. Through the construction of a breakwater and other works there is now excellent harbor accommodation, and numerous vessels call here. Pop. (1911), 213,396.

Colombo. See *Calumba.*

Colon (kō'lun; Gr. *kōlon*), the middle portion of the large intestine, or that which lies between the cæcum and the rectum or terminal portion. In man it is about 4½ feet long, and forms a series of pouches in which the digested food is for a time detained. It is itself believed to have some digestive power.

Co'lon, a punctuation mark, consisting of two dots, one above the other, thus : used to mark a pause in the sense that sometimes might also be indicated by a full stop. It also indicates a connection between a preceding phrase and a following one, and is used preceding a quotation.

Colon, formerly ASPINWALL, a seaport of Panamá, on Manzanillo Island, on the north side of the Isthmus of Panamá, at the Atlantic extremity of the interoceanic railway, and near that of the Panamá Canal. Established in connection with the railway, it had an important transit trade before the canal was begun, and since then the place has been entirely transformed. Since 1903 the United States has had jurisdiction over sanitation and quarantine, and by a treaty in 1914 was given control of the harbor. There is extensive harbor accommodation. Pop. (1912) 17,748.

Colon, a town of Cuba, Province of Matanzas, 40 miles S. E. from Cardenas. It is in a sugar-growing region. Pop. 7124.

Colonel (kėr'nel), the commander of a regiment, whether of horse, foot, or artillery. Any rank above a colonel constitutes the bearer of it a general officer. In the British service the rank of colonel is honorary, except in the artillery and engineers, and is usually bestowed upon officers of superior rank and princes of the blood. In the German, Austrian and Russian armies, when the regiments are very large, the colonelcies are mostly honorary posts, held by royal or distinguished persons. In the United States army a colonel is the chief commander of a regiment of troops, ranking below a brigadier-general, and above a lieutenant-colonel.

Colonna (ko-lon'a), an Italian family that had become important as early as the 8th century. Its fame during the middle ages eclipsed that of every other Roman family except the great rival house of the Orsini. The Colonna family is at present represented by several branches, the Colonna-Sciarra, Colonna-Stigliano, etc. It played an important part in the affairs of Europe, became allied to the greatest houses of Italy, Spain and Germany, and has furnished many celebrated warriors, popes, and cardinals.

Colonna, CAPE (ancient *Sunium*), the southern extremity of Attica, Greece. Its summit is crowned by the ruins of a temple of Poseidon 269 feet above the sea, of which thirteen columns of white marble are still standing.

Colonna, VITTORIA, the most renowned poetess of Italy, was the daughter of Fabrizio Colonna, high-constable of Naples, and born in 1490. At the age of nineteen she was married to the son of the Marquis of Pescara, the companion of her youth, who became one of the distinguished men of his age. They lived in the happiest union, and when her husband died of wounds received at the battle of Pavia (1525), Vittoria sought consolation in solitude and in poetry. She became the object of the deep affection of Michael Angelo, then in his sixty-fourth year, who addressed some of his finest sonnets to her. She died at Rome in 1547. Her most celebrated work is the *Rime Spirituali*, 1538.

Colonnade (kol-o-nād'), in architecture, any series or range of columns placed at certain intervals from each other. When surrounding the building on the exterior the colonnade is called a *peristyle;* when projecting beyond the line of the building it is called a *portico.*

Colony (kol'ō-ni), a settlement formed in one country by the inhabitants of another. Colonies may either be formed in dependence on the mother country or in independence. In the latter case the name of colony is retained only in a historical sense. Properly, perhaps, the term should be limited to a settlement which carries on a direct cultivation of the soil, as in the Dominion of Canada or Australia; such settlements as those of the British in Hindustan or Malta being the mere superposition on the natives of a ruling race which takes little or no part in the general industry of the

country. The motives which lead to the formation of colonies, and the manner of their formation, are various. Sometimes the ambition of extending territory and the desire of increasing wealth have been the chief impulses in colonization; but colonies may now be said to have become a necessity for the redundant population of European states. Among ancient nations the principal promoters of colonization were the Phœnicians, the Greeks, and the Romans; the greatest colonizers in modern times have been the English and the Spaniards, next to whom may be reckoned the Portuguese, the Dutch, and the French. The Germans have latterly contributed largely to the tide of emigration, particularly in the direction of America; but they have done little directly as colonizers.

The Phœnician colonies were partly caused by political dissensions and redundant population, but were chiefly commercial, serving as entrepôts and ports of repair for Phœnician commerce along the coasts of Africa and Spain, in the latter of which they numbered, according to Strabo, more than two hundred. But it was in Africa that the most famous arose, Carthage, the greatest colonizing state of the ancient world. The Greek colonies, which were widely spread in Asia Minor and the islands of the Mediterranean, the coasts of Macedonia and Thrace, in South Italy and Sicily, were commonly independent, and frequently soon surpassed the mother states in power and importance. The colonies of Rome were chiefly military, and while the empire lasted were all in strict subordination to the central government. As the Roman power declined the remains of its colonies amalgamated with the peoples among whom they were placed, thus forming in countries where they were sufficiently strong what are known as the Latin races, with languages (Spanish, Portuguese, French and Italian) which are merely modifications of the old Roman tongue. Before America and the way by sea to the East Indies were discovered, the only colonies belonging to European states were those of the Genoese, Pisans, and Venetians in the Levant and the Black Sea, flourishing establishments on which the mercantile greatness of Italy in those days was largely built.

The Portuguese were the first great colonizers among modern states. In 1419 they discovered Madeira, the Azores, and the Cape Verd Islands; the Congo and the Cape of Good Hope followed; and before the century was out Vasco de Gama had landed at Calicut on the Malabar coast of India. The first Portuguese colonies were garrisons along the coasts where they traded: Mozambique and Sofala on the east coast of Africa, Ormuz and Muscat in the Persian Gulf, Goa and Damao on the west coast of India. Colonies were established in Ceylon in 1505, in the Moluccas in 1510. Brazil was discovered in 1499, and this magnificent possession fell to Portugal, and was colonized about 1530. Bad government at home and the subjection of the country to Spain caused the loss of most of the Portuguese colonies. The Portuguese now possess several territories in Asia, at Goa, Damao and Diu, India: Macao, China; and some islands in the Indian Archipelago. In Africa they possess the Cape Verd and other islands: settlements in Senegambia, Guinea, Mozambique, Sofala, Angola, Benguela, Mossamedes, its colonies in Africa covering an area of nearly 800,000 sq. miles.

Soon after the Portuguese the Spaniards commenced the work of colonization. In 1492 Christopher Columbus discovered for Spain the principal islands of the West Indies and Haiti, or San Domingo, Porto Rico, Jamaica and Cuba were soon colonized. Before the middle of the sixteenth century Mexico, Ecuador, Venezuela, New Granada, Peru and Chile were subdued, and Spain took the first rank among the colonizing powers of Europe. But the Spaniards never really attempted to develop the industrial resources of the subject countries. The pursuit of mining for gold or silver occupied the colonists almost exclusively, and the enslaved natives were driven to work themselves to death in the mines. Cities were founded, at first along the coasts, for the sake of commerce and as military posts; afterwards also in the interior, in particular in the vicinity of the mines, as Vera Cruz, Cumana, Porto Bello, Cartagena, Valencia, Caracas; Acapulco and Panamá on the coast of the Pacific; Lima, Concepcion and Buenos Ayres. The colonial intercourse with Spain was confined to the single port of Seville, afterwards to that of Cadiz, from which two squadrons started annually—the *galleons*, about twelve in number, for Porto Bello; and the fleet, of fifteen large vessels, for Vera Cruz. When the power of Spain declined, the colonies soon took the opportunity to declare their independence, and thus were formed the republics of Mexico, Venezuela, Colombia, Ecuador, Peru, Bolivia, Argentina, Chile, etc. Its remaining colonies, Cuba, Porto Rico, and the Philippine Islands, were taken by the United States as a result of the war of 1898, Cuba becoming an inde-

pendent republic. The Ladrone group was transferred to Germany with the exception of Guam, held by the United States. The colonies of Spain are now confined to about 250,000 sq. miles in Africa and some small islands.

The hate of Philip II, who prohibited Dutch vessels from the port of Lisbon, forced the people of Holland to import directly from India or lose the large carrying trade they had acquired. Several companies were soon formed, and in 1602 they were united into one, the Dutch East India Company, with a monopoly of the East India trade and sovereign powers over all conquests and colonies in India. The Dutch now rapidly deprived the Portuguese of nearly all their East Indian territories, settled a colony at the Cape of Good Hope (1650), established a West India Company, made extensive conquests in Brazil (1623-60), which were soon lost, and more permanent ones on some of the smaller West India Islands, as San Eustatia, Curaçoa, Saba, etc. The growing power of the British and the loss of Holland's independence during the Napoleonic wars were heavy blows to the colonial power of the nation. But the Dutch still possess numerous colonies in the East Indies, among which the more important are Java, Sumatra, Dutch Borneo, the Molucca Islands, and part of New Guinea, also several small islands in the West Indies and Surinam.

No colonizing power of Europe has had a career of such uniform prosperity as Great Britain. The English attempts at colonization began nearly at the same time with the Dutch. After many fruitless attempts to find a northeast or northwest passage to the East Indies, English vessels found their way round the Cape of Good Hope to the East Indies in 1591. The East India Company was established in 1600. English commerce with India, however, was not at first important, and they possessed only single factories on the continent up till the beginning of the 18th century. The ruin of the Mogul Empire in India after the death of Aurengzebe (1707) afforded the opportunity for the growth of British power, as the British and French were compelled to interfere in the contentions of the native princes and governors. The French appeared at first to maintain the superiority; but the British in turn got the upper hand, and the victory of Clive at Plassey in 1756 laid the foundation of an exclusive British sovereignty in India. By the middle of the next century the British territory embraced, with the exception of a few dependent states, nearly the whole of India, this vast territory being still under the government of the East India Company—a mercantile company, controlled by Parliament, but exercising many important functions of sovereignty.

The discoveries of the Cabots, following soon after the voyages of Columbus, gave the English crown a claim to North America, which, though allowed to lie dormant for nearly a century, was never relinquished, and which, in the reign of James I, led to the beginning of colonization on a large scale. Raleigh's settlement on Roanoke Island (North Carolina) in 1585 proved a failure, but in 1607 the colonists sent out by the London Company to Chesapeake Bay founded Jamestown, on the James River, in Virginia. The next great settlement was that of the Pilgrim Fathers, who landed December 21, 1620, in Massachusetts Bay. The colonization of New Hampshire, Maine, New Jersey, Connecticut, Rhode Island, soon followed. In the State of New York and the Hudson River territory the British found the Dutch already in possession; but in 1664 they seized the colony of New Amsterdam by force, changing its name to New York in honor of James, Duke of York. Pennsylvania was founded by William Penn, and colonized with Quakers in 1682; Maryland in 1631 by a party from Virginia; Carolina in 1670 and Georgia in 1732 by colonies from England. Colonies were early established in the West India Islands, including Barbadoes, half of St. Christopher's (1625), and soon after many smaller islands. Newfoundland was taken possession of in 1583, colonized in 1621 and 1633. Canada was surrendered to Britain at the Peace of Paris in 1763. In 1764 began the disputes between Britain and its North American colonies, which terminated with the acknowledgment of the independence of the United States, Canada still remaining a British dependency.

Australia was discovered in the beginning of the seventeenth century. The first Australasian settlements of Britain were penal colonies. New South Wales, discovered in 1770, was established as a penal colony in 1778. Tasmania (Van Dieman's Land), discovered by Tasman in 1642, followed in 1803. West Australia became a free colony in 1829. Victoria was colonized in 1835 and made an independent colony in 1851. South Australia was settled in 1836. All these states are now included in the Commonwealth of Australia. New Zealand was discovered by Tasman in 1642 and made a colony in 1840. The Fiji Islands were

annexed in 1874 and New Guinea in 1884. In South Africa, Cape Colony, first settled by the Dutch in 1652, became an English colony in 1814. Great Britain holds possession of the Boer republics and other vast stretches in Africa. Egypt was formally declared a protectorate in 1914 during the European war; Cyprus was annexed at the same time.

France was somewhat late in establishing colonies. Between 1627 and 1636 the West Indian Islands of St. Christopher's, Guadeloupe, and Martinique were colonized by private persons. Champlain was the pioneer of the French in the exploration of the North American continent, and founded Quebec in 1608. Colbert purchased several West Indian Islands, as Martinique, Guadeloupe, St. Lucia, etc., and sent out colonists in 1664 to Cayenne. In 1670 the East India Company formed by Colbert founded Pondicherry, which became the capital of extensive possessions in the East Indies. At the beginning of the eighteenth century France had extensive settlements in Canada, Nova Scotia and Newfoundland, the most flourishing of the West Indian Islands, and she seemed to have a prosperous career before her in India. In time, however, the rival interests of British and French colonists brought about a conflict which terminated in the loss of Canada and other North American possessions, as well as many of the West Indian Islands, while the dominion of India passed into the hands of the British.

The chief colonial possessions of France are: Algeria, Tunis, part of Morocco, French West Africa, Equatorial Africa, Somaliland, Madagascar, Mayotta, Island of Reunion, French India, Cochin-China, Guadeloupe, Martinique, French Guiana, and some islands in the Pacific.

Of recent years Germany has made an effort to take rank as a colonial power, and at the beginning of the European war (1914) had an African empire of over 1,000,000 sq. miles. Togo, Southwest Africa, and the Cameroons were acquired in 1884, East Africa in the following year. German New Guinea, which included the Bismarck Archipelago, Kaiserwilhelmsland, and some of the Solomon islands, came under the German colonial government in 1884. The Carolines and other islands in the Pacific were acquired in 1899. The long arm of the German empire stretched out to China, where Great Britain had established herself at Hongkong, Weihaiwei, and elsewhere, and in 1898 the bay and surrounding coast of Kiao-chau (193 square miles), were leased by China to Germany for a period of 99 years. but Japan took possession of the territory during the European war. By the treaty of Versailles, 1919, Germany lost all her colonial possessions. Great Britain and dominions gained much the larger portion of Germany's possessions in Africa, also the Pacific islands south of the equator. France gained some of Germany's African possessions.

Japan is the most recent of the empire-building nations, her policy of expansion dating from 1854, the year in which Commodore Perry succeeded in establishing treaty relations between Japan and the United States. French officers remodelled her army; British sailors her navy, and following her easily successful war with China she was ceded Formosa in 1894. As a result of the Russo-Japanese war the paramount interests of Japan in Korea were recognized, and in 1910 Korea was formally annexed by Japan, and given the name of Cho-sen. Japan also acquired the Liao-Tung peninsula with Port Arthur, China's strongest fortress, which Russia had seized. The port of Tsing-tao (Kiao-chow), which Germany had leased from China, was taken by Japan during the European war in 1914. Her 'special interests' in China were recognized by the United States, and an extension of her colonial power in that country is expected.

Belgium became a colonial power by the annexation in 1908 of the Congo Free State, which had been under the personal overlordship of Leopold II, King of the Belgians, who had governed the territory with extreme cruelty.

Italy attempted to take part in the partition of Africa among the European powers, but had an unfortunate experience. In 1882 it erected into a colony a coaling station held by it on the Red Sea, in 1885 occupied Massowah, and in 1889 combined its colonial territory under the name of Eritrea. This lay along the Red Sea coast of Abyssinia and the whole of that ancient kingdom came to be looked upon as under an Italian protectorate. But there was a rude awakening in 1895 when an Italian force, which had penetrated Abyssinia, was attacked at Adowa and completely defeated. As a result, the independence of Abyssinia was acknowledged, but Italy still held Eritria, and added to it a larger district in Somaliland, in the extreme eastern section of Africa. It seized on Tripoli, a Turkish possession, in 1911, a war ensuing between the Italians and the Turks and Arabs. Denmark, the remaining colonizing country of Europe, possesses Iceland, Greenland and the Faroe Islands, ancient acquisitions, though of little value. She owned Santa Cruz, Saint Thomas and Saint John, three

islands in the Virgin Island group of the West Indies, but the United States purchased the Danish West Indies from Denmark in 1917.

At the end of the Spanish-American war (1898) the United States found itself with four new over-seas possessions: Hawaii, Porto Rico, Guam, and the Philippines. Prior to the war the native queen of Hawaii had been deposed and the new government had attempted to negotiate a treaty providing for annexation to the United States. President Cleveland made an effort to restore the deposed queen to power, but failing in this, another treaty of annexation was presented to the Senate in President McKinley's administration. This was still pending when the war broke out. The events in the Philippines forcibly called the attention of the country to the necessity for controlling Hawaii, which was invaluable as a coaling station for the trans-Pacific voyage, and action upon the treaty was consequently hastened. The annexation was finally effected by a joint resolution passed July 7, 1898.

The other new possessions were taken from Spain as the result of military victories. Porto Rico had been invaded and in large part conquered by American troops near the end of the war, and its transfer to American sovereignty was therefore looked upon in the United States as the natural consequence of the conflict. The people of the island apparently desired annexation to the Union, since they had little ambition, as had the Cubans, for national independence. The provision was therefore included without question in the treaty of peace. The same was true of the little island of Guam in the Pacific, which was taken simply for use as a coaling station.

With the Philippines, however, the case was different. The original occupation of these islands by the United States might almost be described as an accident. At the outbreak of hostilities, Admiral Dewey, with the United States Pacific squadron, had received orders to attack the Spanish naval forces at Manila. This was an obvious move from a military point of view, because the destruction of the enemy's naval forces in the Far East was necessary both for the security of the West Coast of the United States and for the security of American commerce. The administration had at the time no idea of acquiring the Philippines. After Dewey's brilliant victory at Manila Bay, when the Admiral asked that troops be sent to occupy the city, and to destroy the Spanish army there, the officials at Washington were so little prepared for an aggressive campaign to seize the islands that it was several weeks before the army could be sent. Even after the American forces had taken Manila, there seems to have been little intention on the part of the administration at Washington to hold the islands permanently. Aguinaldo, the leader of the last Philippine rebellion, had been brought back from exile in an American war ship, and had been encouraged and assisted by Dewey in starting a new uprising. There was no agreement to assist him in securing the independence of the islands, but there was a sort of alliance between him and the American forces against the common enemy. Aguinaldo had occupied nearly all of the rest of the Island of Luzon when the United States forces took Manila.

The preliminary peace protocol had provided that 'the United States shall hold and occupy the city, bay, and harbor of Manila, pending the conclusion of a treaty of peace, which shall determine the control, disposition, and government of the Philippines.' This had been regarded by Spain as providing for the ultimate return of the islands to her. President McKinley apparently had no desire to retain the islands for the United States, and public opinion in this country was entirely undecided as to the course which should be pursued. In the interval between the signature of the protocol on August 12, 1899, and the conclusion of the Treaty of Peace on December 10 of the same year, however, there was a complete change in the attitude of the American people, which was reflected in the action of the government. When the peace commissioners left the United States in September, they were instructed to demand the cession of the Island of Luzon and the grant of reciprocal commercial privileges in the other islands of the archipelago. On October 26, they were instructed by cable to demand the cession of the entire group. The Spanish commissioners objected strongly, but were finally forced to accept the compensation offered—the payment by the United States to Spain of $20,000,000. The Philippines thus became the property of the United States.

The sudden change in the attitude of the United States was due to the so-called 'imperialistic' movement which swept the country in the autumn of 1898. There were several factors which contributed to arouse a strong popular opposition to the abandonment of what was regarded as a legitimate conquest. The cession of the islands by Spain had been demanded by the peace commissioners on political, commercial and humanitarian ground.

Their retention seemed, indeed, to be the only course consonant with the national honor and dignity. It was impossible to return them to Spain, after the revelations which had been made regarding the inefficiency and barbarousness of her rule there, and after the alliance which had existed between the American forces and the Philippine insurgents under Aguinaldo. It was equally impossible to make them independent, because of their manifest unfitness for self-government. There was a strong belief that Germany, which had become an object of grave suspicion since the unpleasant episode between the commander of her far eastern fleet and Admiral Dewey after the battle of Manila Bay, would seize the archipelago as soon as the United States withdrew. The victories of the war, moreover, had aroused a consciousness of national strength and national greatness which lifted the people of the United States out of their absorption in their own internal affairs, and filled them with an ambition to play a larger part in the world than ever before. Newspapers and orators began to speak of the United States as a world power, and to point to the acquisition of the Philippines as the first step in the fulfilment of our destiny to dominate the Pacific. There was a strong feeling that the United States ought to obtain a territorial foothold in the Far East, in view of the apparently approaching partition of China. The seizure of several ports in that empire by European powers in 1898 had aroused grave doubts as to whether it was destined to remain independent many years longer, and the interests of the United States in the future of the empire were felt to be so great that it could hardly afford to neglect an opportunity to obtain a naval and commercial base from which it might exercise an influence upon the course of events.

The expansionist movement was, perhaps, not so much political and sentimental as economic. The business interests of the country were convinced that it was time for the United States to adopt the imperialist ideal which had guided the foreign policy of England, France, and Germany during the three decades just past. Their arguments were the same as those of the commercial leaders who favored expansion in the European countries. They believed that the United States had reached a point where it was impossible for it longer to subsist on its internal trade. The country was at the time passing through an era of immense expansion in commerce and manufactures. The total exports, which had been $857,828,684 in 1890, were $882,606,938 in 1896, $1,050,993,556 in 1897, and 1,231,482,330 in 1898. (1) The percentage of manufactured goods to the total exports had increased from 14.78 per cent in 1880 to 21.18 per cent in 1890 and to 30.15 per cent in 1897. (2) This change in the character of our trade, the imperialists believed, would force the United States to embark on a policy of territorial expansion. The raw materials which had hitherto predominated in the country's foreign commerce had found a ready market in the great manufacturing countries of Europe, but the increase in the volume of manufactured goods made it vital to seek new commercial outlets in countries which were industrially less developed. These outlets could only be obtained in colonies, for the great powers of the world, which had already divided between them the greater part of the earth's surface, were applying or threatening to apply to their possessions a closed door policy, which would exclude the trade of other nations. The Philippines would not only furnish for American goods a market of great ultimate potentialities, but would also provide a center of distribution for American trade in all parts of the Far East.

The arguments of the imperialists were violently combated in the United States. by persons who believed that the new movement involved an abandonment of the nation's traditional policies and ideals. The opponents of expansion declared that neither our form of government nor our national experience fitted us for the control of subject races, and that the acquisition of colonies could not but affect injuriously our own internal political and economic life. Many regarded the exercise of power over another people as a violation of the principles laid down in the Declaration of Independence and the Constitution, and branded the whole movement as un-American and pernicious. Others said that the new possessions would force the United States to become a military power, with danger to the liberty and security of its people. The opposition to the administration's policy was so strong in the Senate that the treaty of peace might not have been accepted if it had not been for the rebellion in the Philippines, which made many of its opponents feel that it would be cowardice to withdraw from the Islands until order had been restored. Immediately after its vote of ratification, however, the Senate passed a resolution stating that its action did not constitute a final determination of its attitude towards the Islands.

The Samoan islands were parceled out among the nations as the result of the

intervention of the powers following a series of internal disturbances, fostered, it must be admitted, by the three foreign powers possessing considerable interests in Samoa: Germany, Great Britain, and the United States. Great Britain received the Solomon and Tonga Islands, Germany got Samoa, and the United States took possession of Tutuila and a few other small islands.

The Canal Zone, a strip of land extending 5 miles on either side of the Panama Canal, was acquired by agreement with the newly created republic of Panama, in 1903, the United States paying $10,000,000 in gold and $250,000 annually for the perpetual right of occupation of the territory.

The Virgin Islands, formerly the Danish West Indies, were acquired by the United States in 1917, the compensation being $25,000,000. The islands composing the group are Santa Cruz, Saint Thomas, and Saint John.

Colophon (k o l'o-f o n), an ancient Greek city of Asia Minor, about 15 miles N. of Ephesus, one of the places claimed as the birthplace of Homer. Here dwelt Mimnermus, the elegiac poet, and some other men of eminence.

Colophon, the device or imprint at the end of a published work, which in old books frequently stated the name of the author as well as the printer's name, along with the date and place of publication, most of which information is now put in the title-page.

Colophony (kol-of'o-ni), the dark resin obtained by distilling turpentine.

Color (kul'ẽr), the name given to distinguish the various sensations that lights of various rates of vibration give to the eye. As in the case with many of the words that denote our sensations, the word *color* is also applied to the properties of bodies that cause them to emit the light that thus affects our senses. The molecular constitution of a body determines the character and number of the light vibrations it returns to the eye, and so gives to each body its own characteristic color; hence the term color is used to denote that in respect of which bodies have a different appearance to the eye independently of their form.

Ordinary white light (the light which comes from an incandescent solid or liquid) when transmitted through triangular prisms of glass or other media differing in dispersive power from the atmosphere is shown to consist of a number of colored lights, which, meeting the eye, together produce the sensation of white light. (See *Spectrum* and *Light.*) The colors thus shown are usually said to be seven—red, orange, yellow, green, blue, indigo, violet; although in reality there is an enormous, if not an infinite number of perfectly distinct colors in light. The seven colors are frequently called the primary colors, and other tints and shades are producible by mixing them; but in a stricter sense the primary colors are three in number, namely, red, green and violet (or blue). These three colors or kinds of light cannot be resolved into any others. In the scientific sense of the word white and black are not considered colors, a white body reflecting and a black body absorbing all the rays of light without separating them, whereas the colors proper are due to separation of the rays of light by partial absorption and reflection or by refraction. If a body absorbs every other kind of light and reflects or transmits red light only, it will appear of a red color; if it absorbs every kind except blue rays, it will appear blue; and so on. If more than one kind of light be transmitted or reflected the object will appear of a color compounded of these different rays of light.

In art the term color is applied to that combination or modification of tints which produces a particular and desired effect in painting. The colors of the spectrum have to be distinguished from color used in reference to *pigments.* The pigments red, blue and yellow, regarded in the arts as the primary colors, produce effects, when mixed, very different from those produced by admixture of the corresponding spectrum colors. These three pigment colors form other colors thus: red and yellow make orange, yellow and blue make green, and red and blue make purple; but red, blue and yellow cannot be produced by any combination of the other colors.—*Local colors* are those which are natural to a particular object in a picture, and by which it is distinguished from other objects.—*Neutral colors,* those in which the hue is broken by partaking of the reflected colors of the objects which surround them.—*Positive colors,* those which are unbroken by such accidents as affect neutral objects.—*Complementary colors,* colors which together make white; thus any of the primary colors is complementary to the other two.—*Subjective* or *accidental colors,* the imaginary complementary colors seen after fixing the eye for a short time on a bright-colored object, and then turning it suddenly to a white or light-colored surface.

Colors in heraldry are *azure,* blue; *gules,* red; *sable,* black; *vert,* green; *purpure,* purple; *tenné* or *tawny,* orange; and *murrey* or *sanguine,* dark crimson. (See *Heraldry.*) Military colors are the

flags or ensigns of a regiment. See *Colors, Military*.

Colorado (kol-o-rä'dō), one of the United States of America, situated in the central belt of states in the Rocky Mountains, between lat. 37° and 41° N., and lon. 102° and 109° W., and containing an area of 103,948 sq. miles. The western and central portions of its area are occupied by an intricate plexus of wild and irregular ranges inclosing valleys known as 'parks,' most of which are fertile, well wooded, and of a mild climate. These 'parks,' are apparently the basins of former lakes upheaved and deprived of their waters above the level of the sea. These parks are generally small, but a few of them are larger than some entire states of the Union, as North Park, Middle Park, and South Park. A large number of the mountains are over 14,000 feet high, including Pike's Peak, Long's Peak, and others. Of the mountain parks, the one best known and most frequented is Estes Park, northwest of Denver, a favorite summer resort. The eastern section of the state is a great plain well adapted for pasture.

The rivers include the Arkansas, South Platte, Grand River, etc.; some of them remarkable for the grandeur of their cañons. (See *Arizona*.) Among wild animals are found the grizzly, the black and the brown bear, prairie-wolf, several kinds of deer, big-horn sheep, etc. There are extensive forests. In the mountain regions the rainfall is small and of the arable lands in the state a great portion require irrigation. As a result the agricultural development has had a comparatively recent beginning. Although a large part of its area is of a character which makes the growing of crops impossible, large portions are admirably adapted for cultivation. The eastern two-fifths, which lies within the Great Plains section of the United States, is largely utilized for grazing purposes, but dry farming has been successful and irrigated portions yield large crops.

To the west of the divide in the San Luis valley, in the south-central part of the state, the rainfall is at times considerable. To the east of the divide, on the plains, the rainfall is heavier, and here some crops are grown without irrigation. The growth of agriculture is indicated by the following figures: The number of all farms in 1910 was 46,170, compared with 24,700 in 1900. The value of farm property from 1900 to 1910 shows a remarkable increase. In the latter year it was $491,471,806 as compared with $161,045,141 in 1900. Orchard fruits are in some parts brought to an unusual degree of perfection. In general, cattle and sheep grazing are the leading pursuits of the rural population, though cattle raising on a large scale is decreasing. Sheep raising, which is confined largely to the southern counties, has likewise decreased.

The climate is dry and healthful, considered especially beneficial to asthmatic and pulmonary sufferers, and the charming parks are becoming great natural sanitariums. The chief wealth of Colorado consists of its minerals, principally gold and silver. These were developed until Colorado led the states in their production, the yield of these two metals in 1897 being valued at $47,078,535, more than one-third the total yield of the country. For many years after 1873 the output of silver was greater than that of gold; in 1892 it was six times as much; but in 1898 the gold was estimated at $24,000,000, the silver at $14,250,000. In 1910 the gold yield was stated at $20,408,641; that of silver (commercial value), about $5,000,000. Coal was the mineral product of second importance and silver ranked fourth. The coal fields of the state are divided by the major ranges of the Rocky Mountains into three groups, the Eastern, the Park, and the Western, the Eastern being the most highly developed. The coal ranges from sub-bituminous in the Denver regions, through various grades of bituminous, including the high grade cooking coal of the Trinidad and Glenwood Springs fields, to true anthracite, in the Crested Butte and Yampa fields. Iron, copper and lead are mined, iron being widely diffused. Other minerals are manganese, petroleum, zinc, cement and fire-clay.

Though pre-eminently a mining state Colorado is active in manufacturing, part of which owes its existence to the needs of the mining industry. Irrigation of the fertile valleys of the Platte and Arkansas rivers and other streams has made the beet-sugar production of Colorado greater than that of any other state. The canning industry is also the outgrowth of the development of irrigation. The fact that Colorado is a natural grazing country is responsible for the development of such industries as slaughtering and meat packing, the manufacture of butter, cheese, and condensed milk, the rendering of grease and tallow, and wool scouring.

The public school system is good, and there is a state university. The transportation facilities are excellent, and Colorado claims a greater railway mileage than any other of the Rocky Mountain states. In view of the fact that there are no navigable rivers in the state the legislature of 1909 created a State Railroad Commission to take general charge of the

COLORADO
DENVER
Colorado Sprs.
Pueblo
Boulder
Trinidad
Cripple Creek
Grand Junction
Leadville
Ft. Collins
Greeley
Sterling
Julesburg
Durango
Walsenburg
Glenwood Sprs.
Continental Divide
UTAH
WYOMING
NEBRASKA
KANSAS
NEW MEXICO
109° Longitude West from Greenwich
Scale of Miles

regulation of railway rates. Colorado was organized as a territory in 1861, and admitted as a State in 1876. The State capital is Denver. Pop. (1900) 539,700; (1910) 799,024; (1920) 939,376.

Colorado, UNIVERSITY OF, a State co-educational institution at Boulder, Colorado, opened in 1877. Number of teachers, 200; students, 1500.

Colorado, a name of two rivers of the United States.—(1) the WESTERN COLORADO, or RIO COLORADO, formed by the junction of the Green and Grand rivers, at about lat. 38° N.; lon. 110° W., in Utah. It flows southwest and south through Arizona, and between Arizona and Nevada and California, and after a total course, including Green River, of about 2000 miles, falls into the Gulf of California. Among the most wonderful natural objects in North America is the Grand Cañon of the Colorado, between lon. 112° and 115° W. Here the river flows between walls of rock which are nearly vertical, and are in some places 6000 feet high. This cañon is more than 300 miles long. (2) A river in Texas which after a course of about 900 miles falls into the Gulf of Mexico at the town of Matagordo. (3) A river in Argentina, about 620 miles long, which empties into the Atlantic Ocean.

Colorado Beetle, an American species of beetle (*Chrysomĕla* or *Polygramma*, or *Doryphŏra decemlineāta*), nearly half an inch in length, almost oval, of a yellowish color marked with black spots and blotches, and on the elytra with ten black longitudinal stripes. The wings are of a blood-red color. It works great havoc among the potato crops, and is popularly known as the Potato Bug.

Colorado Springs, county seat of El Paso Co., Colorado, 70 miles S. of Denver, at the foot of Pike's Peak; elevation, 6038 feet. It is the seat of Colorado College and has ore refineries, etc. Summer and winter resort. Pop. (1910) 29,078; (1920) 30,105.

Color-blindness, total or partial incapability of distinguishing colors. Color-blindness has been divided into three grades: (*a*) Inability to discern any color, so that light and shade, or black and white, are the only variations perceived. (*b*) Inability to distinguish the nicer shades of the more composite colors, as browns, grays, and neutral tints. (*c*) Inability to distinguish between the primary colors, red, blue and yellow, or between them and their secondaries, green, purple, orange and brown. Red is the color which the color-blind are most commonly unable to distinguish, while yellow is the most easily recognized. Color-blindness occurs in eyes whose power of vision, as to form and distance, is quite perfect, and may exist unknown to the person affected by it. This defect is common, especially among men. The cause of it in almost every case which has been carefully investigated has been found to be seated in the sensorium, not in the visual apparatus. It will be easily understood that those whose eyesight is thus defective are disqualified for holding various positions.

Colorimeter (kol-o-rim'e-tĕr), an instrument for measuring the depth of color in a liquid by comparison with a standard liquid of the same tint.

Color Printing, the art of producing pictures, designs, cards, etc., in various colors by means of lithography, printing from metal blocks, etc. The ordinary methods are: (1) the chromo-lithographic, in which a tracing of the original picture, or the like, is first made, and a copy transferred to as many stones as there are colors in the original, every color requiring a separate stone. The drawing of each stone is made to fit in, or *register*, with the preceding one, and as the paper passes through the machine an additional color is added every time, and thus the picture is built up color upon color (each being allowed to dry before the next is put on) until it is completed. Some chromos or oleographs may have as many as 25 or 30 printings or colors. (2) Block or surface color printing is specially adapted for book illustrations or similar work where nicety of detail or rapidity of production is required. As in chromo-lithography various printings are necessary; but these, while producing similar effects, are reduced in number by a method of printing several tints of the same color at one operation. Each block, which is usually of zinc and prepared in the usual way, is capable of producing three or more gradations of the same color; the darkest shade from the normal surface, lighter shades being got from parts which have been bitten or corroded in an almost imperceptible degree—the deepest corrosions giving, of course, the lightest shade. When all the tints of one color are thus printed from one block and at one operation, a second block with gradations, in the same way, is used, registering as in chromo-lithography, and so on until the picture is finished.

Colors, MILITARY, the national flag and the flag of the regiment which contains the device and number of the regiment in gold. The colors, when uncased, are entitled to a salute when borne past a guard and by the command-

ing officer and staff when carried past in review and in general by all officers and enlisted men under regulations prescribed by the Army Regulations. Similar customs prevail in the navy. The national flag is raised at sunrise with a gun salute and lowered at sunset with a gun salute—the playing of the "Star Spangled Banner" by the band.

Color-sergeant, a non-commissioned officer in the army who is a member of the regimental staff. There are two color-sergeants to each regiment, who carry and have charge of the national and regimental colors and are escorted by the color-guard. Color-sergeants rank line-sergeants and receive better pay.

Colossæ (kil-os'sē), an ancient city of Asia Minor, in Phrygia, on the Lycus, a branch of the Mæander. It was the seat of one of the early churches of Asia to whom the apostle Paul wrote about 62 or 63 A. D.

Colosseum (kol-o-sē'um), a name given to the Flavian Amphitheater in Rome, a large edifice for gladiatorial combats, fights of wild beasts, and similar sports. It was begun by Vespasian, and finished by Titus, 80 A. D. The outline of the Colosseum is elliptical, the exterior length of the building being 620 and its breadth 513 feet; it is pierced with eighty openings or vomitaria in the ground story, over which are superimposed three other stories, the whole rising perpendicularly to the height of 160 feet. Although two-thirds of the original building have disappeared, it is still a wonderful structure.

Colossians, EPISTLE TO THE. An epistle written by the apostle Paul, when he was a prisoner in Rome. It falls naturally into four parts: (1) introduction and thanksgiving; (2) nature and work of Christ; (3) doctrine; (4) personal matters and salutations. The third chapter is a picture of the Christian life as seen by Paul. It is a plea that, having put off 'the old man,' the Colossians shall live like new men, putting aside all uncharitableness, bearing themselves with meekness and kindness. The probabilities are that Epaphras, of whom the writer speaks, preached first to the Colossians and was the means of their conversion. Among other early Christian missionaries whom Paul mentions here are Onesimus and Tychicus, the bearers of the epistle; Luke, 'the beloved physician'; Aristarchus, a 'fellow prisoner'; John Mark, called here Marcus; Barnabus, a landowner of Cyprus, who sold his land and laid the price at the feet of the apostles in Jerusalem, becoming a co-preacher with Paul; and Demas, another fellow laborer who later deserted Paul (2 Tim. iv. 10), lacking the heroic mettle of the great apostle.

Colossus (ko-los'us), in sculpture, a statue of enormous magnitude. The Asiatics, the Egyptians, and in particular the Greeks have excelled in these works. The most celebrated Egyptian colossus was the vocal statue of Memnon on the plain of Thebes, supposed to be identical with the most northerly of two existing colossi (60 feet high) on the west bank of the Nile. Among the colossi of Greece the most celebrated was the Colossus of Rhodes, a brass statue of Apollo 70 cubits high, esteemed one of the wonders of the world, erected at the port of Rhodes by Chares, 290 or 288 B. C. It was thrown down by an earthquake about 224 B. C. The statue was in ruins for nearly nine centuries, when the Saracens, taking Rhodes, sold the metal, weighing 720,900 lbs., to a Jew, about 653 A. D. There is no authority for the popularly-received statement that it bestrode the harbor mouth and that the Rhodian vessels could pass under its legs. Among the colossi of Phidias were the Olympian Zeus and the Athena of the Parthenon; the former 60 ft. high and the latter 40. The most famous of the Roman colossi were the Jupiter of the Capitol, the Apollo of the Palatine Library, and the statue of Nero, 110 or 120 ft. high, and from which the contiguous amphitheater derived its name of Colosseum. Recently rock-cut statues have been measured at Bamian on the road between Cabul and Balkh, the largest being 173 ft. high and the second 120 ft.

Among the modern works of this nature is the colossus of San Carlo Borromeo, at Arona, in the Milanese territory, 60 ft. in height; the 'Bavaria' at Munich, 65 ft. high; the statue of Hermann or Arminius near Detmold, erected in 1875, 90 ft. in height to the point of the upraised sword, which itself is 24 ft. in length; the height of the figure to the point of the helmet being 55 ft.; the statue of Germania, erected in 1883 near Rüdesheim, a figure 34 ft. high, placed on an elaborately sculptured pedestal over 81 ft. high; and Bartholdi's statue of Liberty presented to the United States by the French nation, and which measures 104 ft., or to the extremity of the torch in the hand of the figure 151½ ft. It is erected on Bedloe's Island in New York harbor. See *Liberty Statue.*

Colostrum (ko-los'trum), the first milk of mammalia secreted after giving birth to young. It differs in composition from ordinary milk; has a purgative action, and serves to clear the bowels of infants of the meconium or fæcal matter which they contain at birth.

Colporteur (kol-por-teur'), a French term now naturalized in the United States, and appropriated to a class of men always, or most commonly, subsidized by societies or associations with the view of disseminating religious literature by carrying about publications for sale, generally at reduced rates.

Colt (kōlt), SAMUEL (1814-62), an American manufacturer, inventor of the revolver, was born in Hartford, Conn., and in 1835 secured a patent for his revolving pistol. See *Revolver*.

Colton (kōl'ton), CHARLES CALEB, an English writer, born 1780; died by his own hand at Fontainebleau, 1832. He held the united living of Kew and Petersham, but was eccentric in his manners, extravagant in his habits, and irremediably addicted to gambling and its attendant vices. Bewildered by his pecuniary obligations, he fled to the United States, and after a sojourn there of some years took up his abode in Paris, where he acquired a fortune of $125,000 by gambling, which was soon dissipated. Through apprehension of a surgical operation he committed suicide. He wrote several satirical poems, *Hypocrisy*, *Napoleon*, etc.; but his most remarkable work is *Lacon, or Many Things in Few Words*.

Colt's-foot, *Tussilago Farfăra*, a weed of the order Compositæ, the leaves of which were once much employed as a remedy for asthma and coughs. The name is given from the leaf somewhat resembling the foot of a colt, being broad and heart-shaped; the flowers are yellow.

Colt's Revolver. See *Revolver*.

Coluber (kol'ū-bĕr), a genus of non-venomous serpents, which includes, besides several N. American snakes the *Coluber Æsculapii*, common in the neighborhood of Rome, and regarded as the serpent which was sacred to Æsculapius, the god of medicine. To the same family belongs the common ringed snake of Britain (*Tropidonōtus natrix*), which attains a length of 3 or 4 feet.

Columba (ko-lum'ba). See *Columba*.

Colum'ba, ST., a native of Ireland (Gartan in Donegal), born in 521; died in 597. In 545 he founded the monastery of Derry, and subsequently established many churches in Ireland. About 563 he landed in the island of Hy, now called Iona, and founded a church. About 565 he went on a mission of conversion among the northern Picts, and traversed the whole of Northern Scotland preaching the Christian faith and founding monasteries, all of which he made subject to that which he had set up on the island of Hy. The Columban church was in some points of doctrine and ceremonial opposed to that of Rome, to which it owed no allegiance. Shortly before his death he revisited Ireland. There is a well-known life of St. Columba, *Vita Sancti Colvmbæ* written by St. Adamnan, Abbot of Iona.

Columbanus (kol-um-bā'nus), SAINT, or SAINT COLUMBAN, a missionary and reformer of monastic life, born in Ireland apparently about 540, became a monk in the Irish monastery of Benchor (Bangor), went through England to France with twelve other monks to preach Christianity, and founded the monasteries of Annegray, Luxeuil (590), and Fontaine in Burgundy. His rule, which was adopted in latter times by many monasteries in France, commands blind obedience, silence, fasting, prayers and labor, much more severe than the Benedictine rule, and punishes the smallest offenses of the monks with stripes. He retained also the old ecclesiastical customs of the Irish, among which is the celebration of Easter at a different time from the Roman Church. He appears to have remained at Luxeuil for nearly twenty years. He then went among the heathen Alemanni, and preached Christianity in Switzerland. About 612 he passed into Lombardy, and founded the monastery of Bobbio, in which he died in 615. His writings comprise his monastic rule, sermons, some poems and ecclesiastical treatises. His life was written by Abbot Jonas, a successor in the abbacy of Bobbio.

Columbarium (kol-um-bā'ri-um), in Roman antiquities, a place of sepulture for the ashes of the dead after the custom of burning the dead had been introduced. Columbaria consisted of arched and square-headed recesses formed in walls in which the cinerary urns were deposited, and were so named from the resemblance between these recesses and those formed for the doves to build their nests in a dove-cot.

Columbia (kō-lum'bi-a), the capital of South Carolina, situated on an elevated plain on the left bank of the Congaree, 129 miles N. W. of Charleston. It contains some fine public buildings. Among the educational institutions are the South Carolina University, founded in 1804, and the Presbyterian Theological Seminary. The principal manufactures are cotton and fertilizers; in addition to which there are sash and door factory, iron works, foundries and machine shops.

The city was set on fire while occupied by General Sherman's army in 1865. It was made the State capital in 1790. Pop. (1910) 26,319; (1920) 37,524.

Columbia, a city, county seat of Boone Co., Missouri, 125 miles W. by N. of St. Louis. It is primarily a school town, although coal mining and shoe manufacturing are carried on. It is the seat of the University of Missouri (q. v.), Christian College (a school for girls under the control of the Christian Church), Stephens College (a school for girls under the control of the Baptist Church), Missouri Bible College (the State divinity school of the Christian Church), a coaching school for Annapolis, a school of commerce, and an excellent system of city schools. Pop. (1910) 9662; (1920) 10,379.

Columbia, a borough of Lancaster Co., Pennsylvania, on the Susquehanna River, 81 miles W. of Philadelphia. It is the trading center of a wide area and has manufactures of iron, silk, boilers, stoves, brushes, umbrellas, cut glass, wagons, automobile bodies, castings, etc. Pop. 10,836.

Columbia, a city, county seat of Maury Co., Tennessee, 47 miles S. of Nashville. It has flour mills, extensive phosphate, live-stock, cotton and grain interests, and manufactures of furniture, etc. It has a military academy, arsenal, and the Columbia Institute for young ladies. Pop. 5526.

Columbia, DISTRICT OF, a small tract of country on the east bank of the Potomac River, about 120 miles from its mouth, surrounded on three sides by Maryland, and forming a neutral district for the seat of the United States government. It has a land area of 60 square miles; was formed into a territory in 1871; and contains the city of Washington, which has been the national capital since 1800. Georgetown, a former city, is now part of Washington. As originally laid out, the district was 10 miles square, including a small area in Virginia; but this section was retroceded in 1846 and only the Maryland section retained. The affairs of the district and of Washington are administered by three commissioners directly under Congress. Pop. (1910) 331,069; (1920) 437,571.

Columbia River, or OREGON, a river of the United States, flowing into the Pacific Ocean, and rising at the base of the Rocky Mountains in British Columbia. It has a very winding course, partly in British Columbia, but mainly in the United States, where it receives two large tributaries, Clark's Fork and Snake River. Farther down it turns abruptly to the west and forms the boundary between the States of Washington and Oregon. It drains an area of 260,000 sq. miles; length, 1,400 miles.

Columbia University, an educational institution in New York City, established in 1754, and giving courses in literature, science, medicine, law, etc. In 1920 the total number of students was 16,000; teachers, 950. Affiliated with it are Barnard College, Teachers' College, and the College of Pharmacy.

Columbian Exposition, an international exposition of arts, industries, manufactures, etc., held in Chicago from May 1 to October 30, 1893, in celebration of the 400th anniversary of the discovery of America by Columbus. The buildings were covered with a white coating which gave the appearance of marble and led to the exposition being given the name of the 'White City.' The amusements were grouped in the Midway Plaisance. Total attendance, 27,539,041; total receipts, $33,290,065; disbursements, $31,117,353.

Columbus, a city, county seat of Muscogee Co., Georgia, on the Alabama border, at the head of navigation on the Chattahoochee River. Seven lines of railroad radiate in all directions, and the river furnishes ample hydro-electric power. It is the second cotton mill center in the South. Among the other leading articles of manufacture are iron and steel products, fertilizer, brick, tile, sewer pipe, show cases and fixtures, lumber and building products, bottled goods, etc. Camp Benning, the newly established Infantry School of Arms, is 8 miles distant. The city is renowned for its school system, including kindergartens, and industrial, literary and finishing schools. Pop. (1910) 20,554; (1920) 31,125.

Columbus, the capital of Ohio, in Franklin Co., on the Scioto River, near the center of the State. It is the seat of the Ohio State University (in which, with its various colleges, more than 6000 students are enrolled), Capital University (Lutheran), and the Columbus Boys' Academy. The Capitol building, Catholic Cathedral, Memorial Hall, and State institutions for the feeble-minded, the blind and deaf, and the insane, are among the buildings of the city. It is an important center of distribution and industries. The principal manufactures are machinery of all kinds, shoes, automobile accessories, steel and iron products, and printing. Although Columbus suffered heavily from the 1913 flood, practically all of the damage has been repaired. Pop. (1910) 181,511; (1920) 237,031.

Columbus, a city, county seat of Bartholomew Co., Indiana, on the White River, east branch, 41 miles S. by E. of Indianapolis. Its manufactures include wood pulleys, leather, threshing and sawmill machinery, tools, etc. Pop. (1920) 8990.

Columbus, a city, county seat of Lowndes Co., Mississippi, on Tombigbee River, in a cotton and hardwood lumber region. It has cotton and oil mills, etc. The State Industrial Institute is here. Pop. (1920) 10,501.

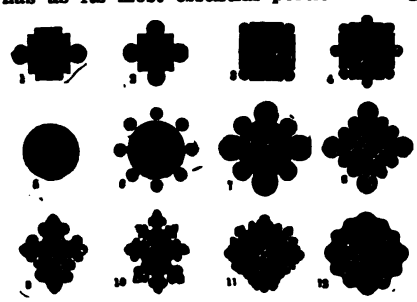
Columbus, a city, county seat of Platte Co., Nebraska, 92 miles W. by N. of Omaha. It has flour mills, etc. Pop. (1920) 5410.

Columbus, CHRISTOPHER (in Spanish, *Cristoval Colon;* in Italian, *Cristoforo Colombo,* which is his real name), was born in Genoese territory about 1446; died at Valladolid, Spain, in 1506. His father, Domenico Colombo, a poor wool-comber, gave him a careful education. He appears to have gone to sea at an early age and to have navigated all parts of the Mediterranean, and some of the coasts beyond the Straits of Gibraltar. In 1470 we find him at Lisbon, where he married the daughter of Bartolommeo de Perestrello, a distinguished navigator. He had gradually come to the conclusion that there were unknown lands belonging to Eastern Asia separated from Europe by the Atlantic. While the Portuguese were seeking to reach India by a southeast course around Africa he was convinced that there must be a shorter way by the west. He applied in vain to Genoa for assistance, and equally fruitless were his endeavors to interest John II of Portugal in the enterprise. He then determined to apply to the Spanish court; and after many disappointments he induced Ferdinand and Isabella to equip and man three vessels for a voyage of discovery. It was early in the morning of Friday, on August 3, 1492, that Columbus set sail from the port of Palos, and after sailing for two months the expedition narrowly escaped failure. The variation of the needle so alarmed the crews that they were on the point of breaking out into open mutiny, and he was obliged to promise that he would turn back if three more days brought no discovery. On the third day (Oct. 12, 1492) the island of Guanahani or San Salvador was sighted, which Columbus believed to belong to Eastern Asia and to be connected with India—a belief which he carried with him to his grave. Hence the mistaken name of *Indians* applied to the natives of America, and that of *West Indies* applied to the group of islands of which Guanahani forms one. On landing Columbus threw himself upon his knees and kissed the earth, returning thanks to God. The natives collected round him in silent astonishment, and his men, ashamed of their disobedience and distrust, threw themselves at his feet, begging his forgiveness. Columbus, drawing his sword planted the royal standard, and in the name of his sovereigns took possession of the country, which, in memory of his preservation, he called *San Salvador.* He then sailed in search of other lands, and discovered Cuba, St. Domingo, and several other of the West India Islands. Being so far successful, he built a fort at Hispaniola, Hayti, left some of his men there, and set out on his return to Europe, where he was received with almost royal honors. In 1493 he set out on his second great voyage from Cadiz, with three large ships of heavy burden and fourteen caravels, carrying 1500 men. He discovered the island of Dominica, and afterwards Mariegalante, Guadaloupe and Porto Rico, and at length arrived at Hispaniola. Finding the colony destroyed, he built a fortified town, which he called, in honor of the queen, *Isabella.* He then left the island in order to make new discoveries, visited Jamaica, and returning after a voyage of five months, worn down with fatigue, found to his great joy that his brother Bartolommeo had arrived at Isabella with provisions and other supplies for the colony. Meanwhile a general dissatisfaction had broken out among his companions, who, instead of the expected treasures, had found hardships and labor. This and news of calumnies being set on foot against him at home induced him to return to Spain, where his presence and probably also the treasure he brought silenced his enemies. In May, 1498, he sailed with six vessels on his third voyage. Three of his vessels he sent direct to Hispaniola; with the three others he took a more southerly direction, and having discovered Trinidad and the continent of America, returned to Hispaniola. His colony had now been removed from Isabella, according to his orders, to the other side of the island, and a new fortress erected called St. Domingo. Columbus found the colony in a state of confusion, but soon restored tranquillity. His enemies, in the meantime, endeavored to convince his sovereigns that his plan was to make himself independent, and Columbus was not only displaced, but Francisco de Bobadilla, a new governor who had come from Spain, even sent him to that country in

chains. On his arrival (in 1500) orders were sent directing him to be set at liberty and inviting him to court, but for his injurious treatment he never got redress, though great promises were made. After some time he was able to set out on his fourth and last voyage (1502) in four slender vessels supplied by the court. In this expedition he was accompanied by his brother Bartolommeo and his son Fernando. He encountered every imaginable disaster from storms and shipwreck, and returned to Spain, sick and exhausted, in 1504. The death of the queen soon followed, and he urged in vain on Ferdinand the fulfillment of his promises; but after two years of illness, humiliations and despondency, Columbus died at Valladolid. His remains were transported, according to his will, to the city of St. Domingo, but on the cession of Hispaniola to the French they were removed in January, 1796, to the cathedral of Havana in Cuba. In 1899 they were removed, with much ceremony to Granada, Spain, though there is some question as to these being the correct remains.

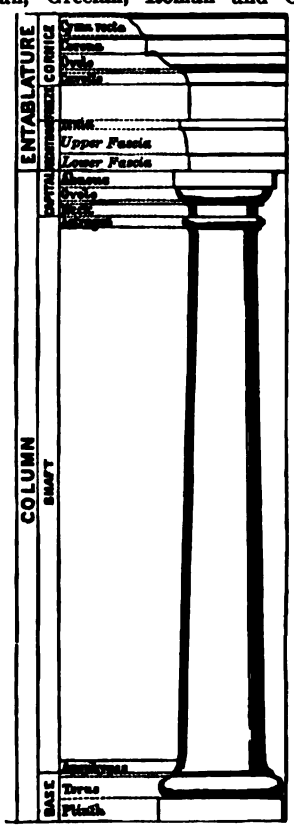
Columella (kol-u-mel'a), LUCIUS JUNIUS MODERATUS, a Roman writer on agriculture; born at Cadiz in Spain; lived about the middle of the first century after Christ, and wrote twelve books, which are still extant, one of which, on gardening (*De Re Rustica*), is in verse.

Column (kol'um; Latin, *columna*), in architecture, a round pillar, a cylindrical solid body set upright and primarily intended to support some superincumbent weight. A column has as its most essential portion a long



Sections of Gothic Columns. 1–4, South Gothic. 5–12, North Gothic.

solid body, called a *shaft*, set vertically on a *stylobate* or on a congeries of moldings which forms its *base*, the shaft being surmounted by a more or less bulky mass which forms its *capital*. In classical architecture columns have commonly to support an *entablature* consisting of three divisions, the *architrave*, *frieze* and *cornice*, adorned with moldings, etc. The accompanying cut will illustrate these and other terms. Columns are distinguished by the names of the styles of architecture to which they belong; thus there are Hindu, Egyptian, Grecian, Roman and Gothic



Column (Tuscan order), illustrating the terms applied to the several parts.

columns. In classic architecture they are further distinguished by the name of the order to which they belong, as Doric, Ionic, Corinthian, Composite or Tuscan columns. They may also be characterized by some peculiarity of position, of construction, of form, or of ornament, as attached, twisted, cabled, etc., columns. Columns are chiefly used in the construction or adornment of buildings. They

have also been used, however, singly for various purposes, especially for monuments. See *Corinthian*, *Doric*, *Ionic*, *Gothic*, etc.

Column, in military tactics, a formation of troops drawn up in deep files, showing a small front; as distinguished from *line*, which is extended in front and thin in depth. They are said to be close or open, according to the intervals between the battalions, regiments, etc., of which they are composed. Sometimes the name column is given to the small army, especially when actively engaged.

Colure (ko-lūr'), in astronomy, one of two great circles which divide the ecliptic into four equal parts. One passes through the solstitial and the other through the equinoctial points of the ecliptic.

Colymbus (ko-lim'bus), the diver genus of birds, giving name to the family Colymbidæ, which includes also the Grebes.

Colza Oil (kol'za), an oil much employed for burning in lamps, and for many other purposes. It is expressed from the seeds of *Brassica campestris oleifera*, and from allied plants of the cabbage family. It is yellowish brown, and has little or no smell. It becomes thick and solid only at very low temperatures.

Coma (kō'ma), in medicine, a state of complete insensibility, resulting from various diseases, as apoplexy; from narcotics, as opium; from accident or injury to the brain; or from excessive cold. When accompanied with delirium and the person's eyes are wide open, it is called *coma vigil*.

Coma, the luminous, nebulous, hair-like substance surrounding the nucleus of a comet.

Coma Berenices, BERENICE'S HAIR, a small constellation of the northern hemisphere containing about forty stars visible to the naked eye, situated between Boötes and the tail of Leo.

Comacchio (ko-mak'ki-ō), a fortified town, Italy, province of Ferrara, amid unhealthy marshes, about 2 miles from the Adriatic, with productive fisheries. It is the seat of a bishopric. Pop. 7944.

Comana (ko-ma'na), an ancient city of Cappadocia, celebrated in antiquity as the seat of the solemn worship of Ma (the moon goddess). Its site has not been identified.

Comanches (kō-man'chez), an American Indian tribe formerly roaming through Texas and part of Mexico. They were excellent horsemen, and extremely warlike, but their numbers are now insignificant. Some of them have been collected on a reservation in the western part of the former Indian Territory, now Oklahoma.

Comayagua (kō-mā-yā'gwā), a town of Central America, in Honduras, the capital of a department of the same name, situated on the southern border of the plateau of Comayagua, about midway between the two oceans. It is a bishop's see and has a cathedral. Pop. about 8000.

Comb, an instrument with teeth, made of tortoise-shell, ivory, horn, wood, bone, metal, or other material, used for dressing the hair, and by women for keeping the hair in its place when dressed. Combs have been used from the earliest times by rude as well as by civilized races.

Combaconum (kom-ba-kō'num), a town of Hindustan, presidency of Madras, district of Tanjore. It was the ancient capital of the Chola dynasty, and is one of the most ancient and sacred towns in the presidency. It has a great many well-endowed Hindu temples, a government college, courts, etc. A brisk trade is carried on with visitors and pilgrims. Pop. 59,623.

Combat, TRIAL BY. See *Battle, Wager of.*

Combe (kōm), ANDREW, a noted physician and medical author, born at Edinburgh in 1797; died in 1847. He was educated at the Edinburgh High School and afterwards for the medical profession at the university there. In 1822 he commenced practice at Edinburgh, and had considerable success. In 1838 he was appointed one of the physicians extraordinary to the queen in Scotland. His chief works are: *Observations on Mental Derangement* (1831), *Principles of Physiology* (1834), *Physiology of Digestion* (1836), and *A Treatise on the Physiological and Moral Management of Infancy* (1840). Like his brother George, he was a zealous phrenologist.

Combe, GEORGE, brother of the foregoing, was born in 1788, at Edinburgh; died at Moore Park, Surrey, in 1858. He was bred to the law, and in 1812 was admitted a member of the Society of Writers to the Signet. He was the first to introduce the doctrines of phrenology into Great Britain; and visited Germany and America lecturing on his favorite science. He was also a zealous promoter of the cause of popular education and social progress; and was among the first to advocate compulsory education and the establishment of a

board of health. Besides the *Constitution of Man*, published in 1828, and which has had an enormous circulation, he is the author of *A System of Phrenology* (1825); *Lectures on Popular Education* (1833); *Moral Philosophy* (1840); *The Life and Correspondence* of his brother, Dr. Andrew Combe (1850); *Principles of Criminal Legislation and Prison Discipline Investigated* (1854); and the *Relation between Science and Religion* (1857).

Combe, WILLIAM. See *Coombe, William.*

Combermere (kom'bêr-mêr), SIR STAPLETON STAPLETON-COTTON, VISCOUNT, an English general, born in 1773; died in 1865. He entered the army in 1790, and took part in the Mysore war against Tippoo Saib in 1798 and 1799. He served with distinction through the Peninsular war, and was commander of the allied cavalry after 1810. In 1814 he was created Baron Combermere. In 1825 he was appointed commander-in-chief in India. He was latterly Constable of the Tower, and a field-marshal.

Combination. See *Permutations and Combinations.*

Combretaceæ (kom-bre-tā'se-ē), an order of shrubby or arborescent polypetalous exogens, tropical shrubs or trees, with leaves destitute of stipules, and long, slender stamens. Some of them are astringent and used for tanning (myrobolans), and the kernels of others are eatable. They are chiefly valued for their brightly-colored, showy flowers, especially in the genus *Combrētum.*

Combustion (kom-bust'yun), the operation of fire on inflammable substances; or the union of an inflammable substance with oxygen or some other supporter of combustion, attended with heat and in most instances with light. In consequence of the combination of the carbon in fuel with the oxygen of the air being the universal method of getting heat and light, and as when the action takes place the fuel is said to burn or undergo combustion, the latter term has been extended to those cases in which other bodies than carbon —for example, phosphorus, sulphur, metals, etc.—burn in the air or in other substances than air—for example chlorine. Though the action between the gas and the more solid material, as coal, wood, charcoal, of whose combination combustion is the result, is mutual, the one having as much to do with the process as the other, yet the former, as oxygen, chlorine, iodine, and the compounds which they form with each other and with nitrogen, have received the name of supporters of combustion, while to the latter the term combustibles has been assigned.

Spontaneous Combustion is the ignition of a body by the internal development of heat without the application of fire. It not infrequently takes place among heaps of rags, wool and cotton when sodden with oil; hay and straw when damp or moistened with water; and coal in the bunkers of vessels. In the first case the oil rapidly combines with the oxygen of the air, this being accompanied with great heat; in the second case the heat is produced by a kind of fermentation; in the third by the pyrites of the coal rapidly absorbing and combining with the oxygen of the air. The term is also applied to the extraordinary alleged phenomenon of the human body being reduced to ashes without the direct application of fire. It is said to have occurred in the aged and persons that were fat and hard drinkers; but most chemists reject the theory and altogether discredit it.

Comedietta (kom-ē-di-et'a), a dramatic composition of the comedy class, but not so much elaborated.

Comedy (kom'e-di), a dramatic composition of a light and amusing class, its characters being represented as in the circumstances or meeting with the incidents of ordinary life; distinguished from *tragedy* by its sprightliness, and the termination of its plot or intrigue being happy; and from *farce* by its greater refinement and moderation, and by more of probability and less of burlesque. See *Drama.*

Comenius (kō-mā'ni-us), JOHANN AMOS, a Moravian educational reformer, born in 1592; died in 1671. He was chosen bishop of the Moravian Brethern, and suffered much in the persecutions of that body. He was the author of upwards of ninety works, the most important of which are *Janua Linguarum Reserata* (1631) and *Orbis Sensualium Rictus* (1658). His high reputation brought him invitations from England, Sweden and Hungary to aid in organising public instruction; and the above works have been frequently translated and imitated.

Comets (kom'ets), certain celestial bodies which appear at occasional intervals, moving through the heavens in paths which seem to correspond with parabolic curves, or in a few instances in elliptical orbits of great eccentricity. The former, after being visible from the earth for a shorter or

longer time, disappear into space apparently never to return; the latter return to us periodically. Some comets are only visible by the aid of the telescope, while others can be seen by the naked eye. In the latter case they usually appear like stars accompanied with a train of light, sometimes short and sometimes extending over half the sky, mostly single and more or less curved, but sometimes forked. In a comet which appeared in 1744 the train was divided into several branches, spreading out from the head like a fan. The train is not stationary relatively to the head, but is subject to remarkable movements. The direction in which it points is always opposite to the sun, and as the comet passes its perihelion the train changes its apparent position with extraordinary velocity. The head of the comet is itself of different degrees of luminosity, there being usually a central core, called the *nucleus*, of greater brilliancy than the surrounding envelope, called the *coma*.

Comets were long regarded as supernatural objects, and usually as portents of impending calamity. Tycho Brahe was the first who expressed a rational opinion on the subject, coming to the conclusion that the comet of 1577 was a heavenly body at a greater distance from the earth than that of the moon. The general law of the motion of bodies, as well as his own observation on the comet of 1680, led Newton to conclude that the orbits of the comets must, like those of the planets, be ellipses, having the sun in one focus, but far more eccentric; and having their *aphelions*, or greater distances from the sun, far remote in the regions of space. This idea was taken up by Halley, who collated the observations which had been made of all the twenty-four comets of which notice had been taken previous to 1680. The results were very interesting. With but few exceptions the comets had passed within less than the earth's shortest distance from the sun, some of them within less than one-third of it, and the average about one-half. Out of the number, too, nearly two-thirds had had their motions retrograde, or moved in the opposite direction to the planets. While Halley was engaged on these comparisons and deductions the comet of 1682 made its appearance, and he found that there was a wonderful resemblance between it and three other comets that he found recorded—the comets of 1456, of 1531 and of 1607. The times of the appearance of these comets had been at very nearly regular intervals, the average period being between seventy-five and seventy-six years. Their distances from the sun, when in *perihelion*, or when nearest to that luminary, had been nearly the same, being nearly six-tenths of that of the earth, and not varying more than one-sixtieth from each other. The inclination of their orbits to that of the earth had also been nearly the same, between 17° and 18°; and their motions had all been retrograde. Putting these facts together, Halley concluded that the comets of 1456, 1531, 1607 and 1682 were reappearances of one and the same comet, which revolved in an elliptic orbit round the sun, performing its circuit in a period varying from a little more than seventy-six years to a little less than seventy-five; or having, as far as the observations had been carried, a variation of about fifteen months in the absolute duration of its year measured according to that of the earth. For this variation in the time of its revolution Halley accounted upon the supposition that the form of its orbit had been altered by the attraction of the remote planets Jupiter and Saturn as it passed near to them; and thence he concluded that the period of its next appearance would be lengthened, but that it would certainly reappear in 1758 or early in 1759. As the time of its expected reappearance approached, Clairaut calculated that it would be retarded 100 days by the attraction of Saturn, and 518 by that of Jupiter, so that it would not come to the perihelion, or point of its orbit nearest the sun, till April 13, 1759. It actually reached its perihelion on March 13, 1759, being thirty days earlier than he had calculated. Along with the period of this comet and its perihelion distance, the magnitude and form of its path were also calculated. Estimating the mean distance of the earth from the sun at 95,000,000 miles (the number which was at that time considered as the true one), the mean distance of the comet was calculated to be 1,705,250,000 miles; its greatest distance from the sun, 3,355,400,000; its least distance, 55,100,000; and the transverse or largest diameter of its orbit, 3,410,500,000. This comet, therefore, is a body belonging to the solar system, and quite beyond the attraction of any body which does not belong to that system; and as this is determined of one comet, analogy points it out as being the case with them all. In 1835 it again returned, being first seen at Rome, August 5, and from that time continued to be observed till the end of the year in Europe, and through a great part of spring in 1836 in the southern hemisphere. It returned again

in 1910, but on this occasion had lost most of its brilliancy and was barely observable with the naked eye, much to the disappointment of those who had been awaiting its return with expectations of a striking spectacle.

The comet denominated *Encke's comet*, which has made repeated appearances, was first observed in 1818, and was identified with a comet observed in 1786, also with a comet discovered in 1795 by Miss Herschel in the constellation Cygnus, and with another seen in 1805. Its orbit is an ellipse of comparatively small dimensions, wholly within the orbit of Jupiter; its period is 1200 days, or about three years and three-tenths. It has been frequently observed since. Another comet, the history of which is of the utmost importance in the latest theories regarding the connection of these bodies and the periodic showers of shooting-stars, is one known as Biela's comet, discovered in 1826. It revolved about the sun in about 6¾ years, and was identified as the same comet which was observed in 1772 and in 1806. Its returns were noted in 1832, 1839 and 1845. In 1846 it divided into two, returned double in 1852, but has not since been seen, the supposition being that it has been dissipated, and that it was represented by a great shower of meteors that were seen in Nov. 1872. One of the most remarkable comets of recent times was that known as Donati's, discovered by Dr. Donati, of Florence, in 1858. It was very brilliant in the autumn of that year, and on October 18th was near coming into collision with Venus. The year 1881 was remarkable for the number of comets recorded. During that year no fewer than seven comets, including the well-known short-period comet Encke's were observed.

The paths in which comets move are not, like those of the planets, all nearly in the same plane as the orbit of the earth, but are inclined to that orbit at all angles. Leaving out the small planets that have recently been discovered, all the others are contained within a zone extending only 7° on each side of the earth's orbit; and, with the exception of Mercury (by far the smallest of the *old* planets), they are within half that space. But the orbits of the comets are at all possible angles; and the number increases with the angle, so that they approximate to an equal distribution in all directions round the sun as a center. Taking all the orbits of which the inclinations have been ascertained, it has been found that of every hundred the inclinations are as follows: from 0° to 30°, 28; 30° to 50°, 27; 50° to 80°, 39; and 80° to 90°, 8. The comets that have been observed have made their passages through very different parts of the solar system; 24 have passed within the orbit of Mercury, 47 within that of Venus, 58 within that of the Earth, 73 within that of Mars, and the whole within that of Jupiter. Of a hundred or thereabouts, mentioned by Lalande, about one-half have moved from west to east, in the same direction as the planets, and the other half in the opposite direction. The direct and retrograde ones do not appear to follow each other according to any law that has been discovered. From 1299 to 1532 all that are mentioned were retrograde; and five that were observed from 1771 to 1780 were all direct.

That the comets are formed of matter of some sort or other we know from the dense and opaque appearance of their nucleus, as well as from the action of the planets upon them; but as their action upon the planets has not been great, or even perceptible, we are led to the conclusion that they are not bodies of the same density or magnitude as even the smallest and rarest of the planets. They are probably groups of meteoric masses, varying in size. One theory of the nature of comets is that these bodies were ejected millions of years ago from the interior of suns, or planets in a sunlike state. When a comet is viewed through a telescope of considerable power there appears a dense nucleus in the center of the luminous and apparently vaporous matter of which the external parts are composed; and the opacity of this nucleus varies in different comets. On its first appearance, and again when it recedes, the luminous part of the comet is faint and does not extend far from the nucleus; but as it moves on towards the perihelion the brightness increases, and the luminous matter lengthens into a train, which, in some cases, has extended across a fourth of the entire circumference of the heaven. The most remarkable discovery of recent times regarding comets is the identity of the course of some of them with the orbit of certain showers of shooting stars. This was first demonstrated by the Italian astronomer Schiaparelli, who proved the agreement between the orbit of the great comet of 1862 and that of the star-shower seen annually about August 9th and 10th. It has since been demonstrated that every meteoric stream follows in the train of some comet large or small, which either exists now or has been dissipated, as Biela's comet was, leaving only its meteoric trail to show where it once traveled; and that every comet is

followed or preceded by a train of meteors, extending over a greater or less portion of the comet's orbit.

Besides the very interesting Halley comet, which, true to the period assigned to it, re-appeared in 1910, the most important recent comet appearances have been that known as Pons-Brooks, which made its re-appearance in 1884 and has a periodicity of about seventy-one and one-half years, or about five years less than Halley's; the Westphal, which last appeared in 1913, with a period of slightly over sixty-one years; the Olbers, in 1887, its period being about seventy-two and one-half years. Those four are of what is called the Neptune 'family,' and describe elliptic orbits. Besides the Biela comet, whose re-appearance occurred last in 1852, but which has failed to appear according to the periodicity established, another comet, known as the Brorson, seems to have been lost. It last appeared in 1879 and has been looked for in vain since that year. It is suggested that in 1880 its orbit intersected that of Denning II near the orbit of Jupiter and that it underwent such perturbation as materially to alter its orbit and period. Almost every year a number of short period comets are discovered. In April, 1916, Wolf discovered at Heidelberg a new comet with a periodicity of nearly eight years; it reached its perihelion in June, 1917. Schaumasse's comet is another short-period comet, appearing every six years. It was observed in 1913, within 90,000,000 miles of Jupiter; again at the end of 1919 it approached within 120,000,000 miles of the earth. See *Donati's* and *Halley's Comets.*

Comfrey (com'frē), a name given to several European and Asiatic plants of the genus *Symphytum*, nat. order Boraginaceæ. The common comfrey, *S. officinale*, is found on the banks of rivers and ditches. Its root abounds in mucilage, which is useful in irritations of the throat, intestines and bladder.

Comiso (kō-mē'sō), a town of Sicily, province, Syracuse, 13 miles w. of Ragusa. Pop. 21,873.

Comitia (kō-mish'i-a), with the Romans, the assemblies of the people in which such public business was transacted as the election of magistrates, the passing of laws, etc. These were of three kinds: (1) The *comitia curiata*, or assemblies of the patrician houses or *populus* in wards or *curiæ*. (2) The *comitia centuriata*, or assemblies of the whole Roman people, in divisions called *centuries*. (3) The *comitia tributa*, or assemblies of the plebeian tribes only.

Comity of Nations (*comitas gentium*), a phrase adopted in international law to denote that kind of courtesy by which the laws and institutions of one state or country are recognised and given effect to by the government of another.

Comma (kom'a), in punctuation, the point [,] denoting the shortest pause in reading, and separating a sentence into divisions or members according to the construction. —In music, a comma is the smallest enharmonic interval, being the difference between a major and a minor tone, and expressed by the ratio 80 : 81.

Commander (kom-an'dėr), a chief; the officer of an army or any division of it. The office of *commander-in-chief* is the highest staff appointment in the army. In foreign armies title is sometimes not commander-in-chief, but field-marshal commander-in-chief, the difference being that the former is appointed by patent for life, while the latter is appointed by a letter of service, and holds office only during the pleasure of the sovereign. In the United Stutes the President is declared by the Constitution to be commander-in-chief of the army and navy. In the navy, a commander ranks a lieutenant. In matters of etiquette he ranks with a lieutenant-colonel in the army.

Commandeering (kom-an-dėr'ing), a term used by the Boers in the British-Boer war to designate the seizing of supplies, cattle, etc.

Commandery (kom-an'de-ri), a term used in several senses in connection with some of the military and religious orders, as the Templars, Hospitalers, etc. In certain religious orders, as those of St. Bernard and St. Anthony, it was the district under the authority of a dignitary called a commander.

Commandments. See *Decalogue.*

Commencement (kom-ens'ment), in the universities and colleges of the United States, also in that of Cambridge, England, the day when bachelors and masters of arts and doctors receive their degrees.

Commendam (kom-en'dam), the administrative or provisional management of a benefice during a vacancy. The person entrusted with the management was called *commendator*. The grant of ecclesiastical livings in this way gave rise to great abuses. In England the term was applied to a living retained by a bishop after he had ceased to be an encumbent. By 6 and 7 Wil-

liam IV the holding of livings *in commendam* was, for the future, abolished.

Commensal (kom-en'sal; L. *con.* and *mensa*, a table), a messmate; applied in zoology to animals who live on or in other animals for part or the whole of their life, simply sharing the food of their host without being parasitic on him: thus the pea-crabs live within the cavity of shellfish, and find their food in the water introduced for the benefit of their host.

Commensurable (kom-en'sur-a-bl), an appellation given to such quantities or magnitudes as can be measured by one and the same common measure. *Commensurable numbers* are such as can be measured or divided by some other number without any remainder; such are 12 and 18, as being measured by 6 or 3.

Commentary (kom'en-tar-i), a term used (1) in the same sense as *memoirs*, for a narrative of particular transactions or events, as the *Commentaries* of Cæsar. (2) A series or collection of comments or annotations. These may be in the form of detached notes or in a series of remarks written in connected form.

Commentry (kom-măn-trē), a town of France, dep. of Allier, 8 miles S. E. of Montluçon, in the midst of a vast coal-field, to which the town owes its prosperity. Pop. 7581.

Commerce (kom'ĕrs), the interchange of goods, merchandise, or property of any kind between countries or communities; trade; traffic. The commerce of the United States has grown greatly within recent years, reaching a total in the fiscal year 1910-11 of $3,590,000,000. The exports exceeded the imports by $530,000,000. The manufactured goods exported reached the high total of $910,000,000.

Commerce, Department of, an executive department of the United States government, created in Feb., 1903, as the Department of Commerce and Labor. It has charge of the commercial interests of the country, and until the creation of the Department of Labor in 1913 had charge of the labor interests. Its head official is a member of the President's Cabinet.

Commerce, Chamber of, a board chosen from among the merchants and traders of a city to protect the interests of commerce; to lay before the legislature the views of their members on matters affecting commerce; to furnish statistics as to the staple trade of the locality; and to attain by combination advantages which could not be reached by private enterprise, etc. These associations originated in France early in the eighteenth century. Nearly all large cities in the United States have chambers of commerce.

Commercial Law (kom-ĕr'shal; or the *law merchant*), the law which regulates commercial affairs among the merchants of different countries, or among merchants generally. It is derived from the different maritime codes of mediæval Europe, the imperial code of Rome, international law, and the custom of merchants. Lord Mansfield (1704-93) was the first great exponent of commercial law in Britain. In this country the term is applied to that system of laws which refers to mercantile contracts, and is based upon the custom of merchants. The principal subjects embraced within it are the laws of shipping, including that of marine insurance; the law of negotiable bills of exchange and promissory notes; and the law of sales.

Commercial Travelers, salesmen who travel in the interest of trading houses or manufactories. Formerly merchants from smaller towns sought the large cities to make purchases, and do so yet to some extent, but competition in business has led to the custom of sending traveling agents to the smaller dealers to solicit their trade. 'Drummer' is the familiar name for these agents in the United States; 'bagman' or 'rider' in England.

Commercial Treaties, treaties entered into between two countries for the purpose of improving and extending their commercial relations; each country engaging to abolish, to reduce to an agreed rate or otherwise modify the duties on articles of production and manufacture imported from the one country into the other. They are usually for a limited period, but may be renewed and modified according to altering conditions. In these treaties the phrase, 'most favored nation,' implies concessions equal to the most favorable granted under any similar treaty. The first treaty of commerce made by England with any foreign nation was entered into with the Flemings in 1272; the second was with Portugal and Spain in 1308. A measure to establish reciprocity of trade between the United States and Canada was passed by the Congress of the United States in 1911, but was rejected by Canada. Treaties of like nature have been negotiated with most of the American and a number of the European nations.

Commercy (kom-ĕr-sē'), a town of France, dep. Meuse, on the Meuse, 21 miles E. of Bar-le-Duc. Pop. (1906) 5622.

Commination (kom-i-nā'shun), an office in the liturgy of the Church of England, appointed to be read on Ash Wednesday or on the first day of Lent, containing a recital of God's anger and threatenings towards sinners.

Commines, or COMINES (kō-mēn), two towns, one in France, the other in Belgium, on opposite sides of the Lys, 8 miles N. of Lille. Anciently they formed a single town, which was fortified and had a castle, in which Philip de Commines was born. Pop. of French Commines, 8000; of Belgian Commines, 6000.

Commines (kō-mēn), PHILIPPE DE, French writer and statesman, born in 1445 at Commines; died in 1509. He became confidential adviser of Charles the Bold, Duke of Burgundy, but in 1472 he passed into the service of Louis XI, who loaded him with marks of favor. After the death of Charles the Bold Louis took possession of the duchy of Burgundy, sent Commines there, and soon after appointed him ambassador to Florence. He was afterwards sent by Louis to Savoy, for the purpose of seizing the young Duke Philibert, and of placing him entirely under the guardianship of the king, his uncle. In 1483 Louis XI died, and next year Commines attended Charles VIII in his invasion of Italy, and served him in a diplomatic capacity. Soon after that date he began to write his *Memoirs*, valuable as contributions to the history of his times. The first edition was published at Paris between 1523 and 1528. He relates in them the events which occurred during his life, and in most of which he had an active share, in lively, natural language, and displays everywhere a correct judgment, acute observation, and a profound knowledge of men and things.

Commissariat (kom-i-sā'ri-at), the department of an army whose duties consist in supplying transport, provisions, forage, camp equipage, etc., to the troops; also, the body of officers in that department. In the British army the commissariat and transport are under the Ordnance Store Department, with two commissaries-general and a number of deputy-commissaries-general, assistant commissaries-general, etc. In the United States army the Subsistence Department has one brigadier-general (commissary-general of subsistence), two colonels, three lieutenant-colonels, eight majors and twelve captains.

Commissary (kom'i-sar-i).—1. As an ecclesiastical term, an officer of a bishop who exercises spiritual jurisdiction in remote parts of a diocese, or one entrusted with the performance of the duties in the bishop's absence. 2. In the army a term applied to officers charged with furnishing provisions, etc., for its use.

Com'missary-court, in Scotland, a sheriff or county court which decrees and confirms executors to deceased persons leaving personal property in Scotland, and discharges relative incidental functions.

Commission (ko-mish'un), a formal act of trust; a warrant by which any trust is held or authority exercised.—A written document, investing a person with an office or certain authority.—A certificate issued by authority by which a military officer is constituted; as, a captain's *commission*.—A body of persons joined in an office of trust, or their appointment; as, a building *commission*.—Brokerage, allowance, or compensation made to a factor, agent, etc., for transacting the business of another; as one per cent. *commission* on sales.—*Commission of bankruptcy*, a commission appointed to investigate the facts relative to an alleged bankruptcy, and to secure all available assets and effects for the creditors concerned.

A *commission merchant* is one who sells goods on behalf of another, being paid by a certain percentage which is called his *commission*.—*Putting a ship in commission* is fitting her out for service after she has been laid up.

Commission, City Government by, a method of municipal government adopted originally in Galveston, and since applied successfully in New Orleans and many other American cities. Its purpose is to conduct the business affairs of cities on business principles and to do away with the system of political control and patronage. Usually five prominent business men of the city are elected as heads of the several municipal departments, and the management of affairs put under their care, the citizens retaining the right of recall of these officials from office if they prove incompetent or dishonest. The system, when fully tried, has proved desirable financially and otherwise. In 1912, 207 cities in 34 states had commissions.

Commissioners of Highways, officers having certain powers and duties concerning the highways within the limits of their jurisdiction. In some of the states they are county officers, and their jurisdiction is co-extensive with the county. In others they are town or township officers. They have power to establish,

repair or vacate highways, and it is their duty to cause them to be kept in good order.

Commissure (kom'i-sūr), in anatomy, a joining or union of two parts, as the sutures of the *corpus callosum* or *great commissure* of the brain.

Committee (kom-it'ē), one or more persons elected or appointed to attend to any matter or business referred to them either by a legislative body, or by a court, or by any corporation, or by any society or collective body of men acting together. In Parliament or Congress, when a committee consists of the whole members of the body acting in a different capacity from that which usually belongs to them it is called a *committee of the whole house*, the business of which is conducted under somewhat different regulations from those under which the business of the house when not in committee is carried on. Familiar examples are *committees of supply* and *committees of ways and means*.—*Standing committees* are such as continue during the existence of the legislative body, and to these are committed all matters that fall within the purposes of their appointment, as the committee of elections or of privileges, etc. —*Select committees* are appointed to consider and report on particular subjects.—When the House of Representatives resolves itself into the committee of the whole house the speaker leaves the chair, which is occupied by one of the members, denominated the Chairman of Committee.

Committee of Public Safety (*Comité du Salut Public*), a body elected by the French Convention (April 6, 1793) from among its own members, at first having very limited powers conferred upon it—that of supervising the executive and of accelerating its actions. Subsequently, however, its powers became extended; all the executive authority passed into its hands, and the ministers became merely its scribes. It was at first composed of nine, but was increased to twelve members, viz.: Robespierre, Danton, Couthon, Saint-Just, Prieur, Robert-Lindet, Hérault de Séchelles, Jean-Bon Saint-André, Barrère, Carnot, Collot d'Herbois and Billaud Varennes. The severe government of this body is known as the Reign of Terror, which ended with the execution of Robespierre and his associates in July, 1794. During the commune (March to May, 1871), a similar committee was established in Paris.

Commodore (kom'ō-dōr), in the British navy, an officer, generally a captain, holding a temporary commission with a rank between that of captain and admiral, who commands a ship or detachment of ships in the absence of an admiral. They are of two kinds—one having a captain under him in the same ship, and the other without a captain. The former has the rank, pay, and allowance of a rear-admiral, the latter the pay and allowance of a captain, with a special allowance as the admiralty may direct. They both carry distinguishing pennants. In the United States the title of commodore was occasionally given by courtesy to captains in the navy in former wars, as in the case of Commodore Perry, but it was not made an official title until the time of the Civil war, and it was abolished again in 1900, all the commodores now recognized being those on the retired list. The title is also given by courtesy to the senior captain of a line of merchant vessels, and also to the president of a yachting club.

Commodus (kom'ō-dus), L. ÆLIUS AURELIUS, a Roman emperor, son of Marcus Aurelius, was born in A.D. 161; killed in 192. He succeeded his father in 180, and gave early proofs of his cruel and voluptuous character. He gave himself up to the lowest society and the most shameless habits. He used to fight in the circus like a gladiator, and caused himself to be worshiped as Hercules. One of his concubines, whom he intended to put to death, administered poison to him; but it operated too slowly, and he was strangled by a favorite athlete.

Common (kom'un), in law, 'a profit which a man hath in the land of another.' There are certain rights of common which are recognized by the common law, namely, of *pasture*, of *piscary* or fishing, of *estovers* or cutting wood, and of *turbary* or of digging turf. But the phrase usually means the right of pasturing cattle, horses, etc., in a certain field, or within a certain territory. These rights have been mostly determined by prescription or immemorial usage. In Scotland a common is a piece of ground of which there is no superior, but the land is the land of the community generally.

Common Carriers. See *Carrier*.

Common Council, the council of a city or corporate town, empowered to make by-laws for the government of the citizens. The common councils sometimes consist of two

houses, chambers, or courts, and sometimes form only one. In the American cities the city council is generally composed of two branches, called, respectively, select and common. They are elected by the people.

Com'moner, in Britain, a term applied to all citizens except the hereditary nobility.

Common Law, the unwritten law, the law that receives its binding force from immemorial usage and universal reception, in distinction from the written or statute law; sometimes from the civil or canon law; and occasionally from the *lex mercatoria*, or commercial and maritime jurisprudence. It consists of that body of rules, principles, and customs which have been received from former times, and by which courts have been guided in their judicial decisions. The evidence of this law is to be found in the reports of those decisions and the records of the courts. Some of these rules may have originated in edicts or statutes which are now lost, or in the terms and conditions of particular grants or charters; but it is quite certain that many of them originated in judicial decisions founded on natural justice and equity, or on local customs. It is contrasted with (1) the statute law contained in legislative acts; (2) equity, which is also an accretion of judicial decisions, but formed by a new tribunal, which first appeared when the common law had reached its full growth; and (3) the civil law inherited by modern Europe from the Roman Empire. Wherever statute law, however, runs counter to common law, the latter is entirely overruled; but common law, on the other hand, asserts its preëminence where equity is opposed to it.

Common Pleas, in law, pleas brought by private persons against private persons, or by the government, when the cause of action is of a civil nature. In many States of the United States a court having jurisdiction generally in civil actions. In England the Court of Common Pleas is now merged in the High Court of Justice.

Common Prayer, Book of, the liturgy or public form of prayer prescribed by the Church of England to be used in all churches and chapels, and which the clergy are to use under a certain penalty. The Book of Common Prayer is used also by the English-speaking Episcopal churches in Scotland, Ireland, America, and the colonies, as well as by some non-episcopal bodies, with or without certain alterations. It dates from the reign of Edward VI; was published in 1549, and again with some changes in 1552. Some slight alterations were made upon it when it was adopted in the reign of Elizabeth. In the reign of James I, and finally soon after the Restoration, it underwent new revisions. The Book of Common Prayer of the Protestant Episcopal Church in America was ratified, after several revisions of the English book, in 1789, and was in general use until the adoption of the 'Standard' at the General Convention, Baltimore, Maryland, in 1892. This was published Easter, 1893, and is now in general use.

Commons, House of. See *Britain* and *Parliament*.

Common Schools, a term used in the United States as equivalent to primary or elementary schools. They are supported by taxation and the rent or sale of school-lands.

Common Time, in music, is that in which every bar contains an even number of subdivisions, such as two minims, four quavers, or their equivalents. It is of two kinds, simple and compound. Simple common time is that which includes four beats in a bar, or any division of that number, or square of the number or its divisions. Compound common time includes two or four beats of three crochets or quavers to each beat.

Commonwealth (kom'un-welth), the whole body of people in a state; the body politic. In English history the name given to the form of government established after the death of Charles I, and which lasted until the restoration of Charles II (1649-59).

Communalism (kom'ū-nal-izm), the theory of government by communes or corporations of towns and districts, adopted by the advanced republicans of France and elsewhere. The doctrine is that every commune, or at least every important city commune, as Paris, Marseilles, Lyons, etc., should be a kind of independent state in itself, and France merely a federation of such states. This system must not be confounded with *Communism*, with which however, it is naturally and historically allied, though the two are perfectly distinct in principle.

Commune (kom'ūn), a small territorial district in France, being one of the subordinate divisions into which that country is parceled out: the name is also given to similar divisions in some other countries, as Belgium. In the country a commune sometimes embraces a number of villages, while some large cities are divided into a number of

communes. In either case each commune is governed by an officer called a mayor.

Commune of Paris. —1. A revolutionary committee which took the place of the municipality of Paris in the French revolution of 1789, and soon usurped the supreme authority in the state. Among its chiefs were some of the most violent of the demagogues, such as Hébert, Danton and Robespierre, 2. The name adopted by the ultraradical party in Paris brought once more into prominence by the events of the Franco-German war, more immediately by the siege of Paris (Oct., 1870, to Jan., 1871). They ruled over Paris for a brief period after the evacuation of the German troops, and had to be suppressed by troops collected by the Natural Assembly of France. Much bloodshed and wanton destruction of property took place before the rising was put down by M. Thiers' government.

Communion (ko-mun'yun), the act of partaking with others of the sacramental symbols in the Lord's Supper. See *Lord's Supper*.

Communism (kom'ū-nizm), the economic system or theory which upholds the absorption of all proprietary rights in a common interest, an equitable division of labor, and the formation of a fund for the supply of all the wants of the community; the doctrine of a community of property, or the negation of individual rights in property. No communistic society has as yet been successful. Robert Owen made several experiments in modified communism, but they failed. St. Simon, Fourier and Proudhon have been the chief exponents of the system in France. Socialism (*q. v.*) is succeeding communism as an economic system.

Commutator (kom-ū-tā'tor), a piece of apparatus used in connection with many electrical instruments for reversing the current from the battery without the necessity of changing the arrangement of the conductors from the poles.

Comne'ni, an extinct family of sovereigns, statesmen, generals and authors, said to be of Italian origin, to which belonged, from 1057 to 1185, six emperors of the East—Isaac I, Alexis I, John II, Manuel I, Alexis II and Andronicus I. When the Crusaders had overturned the throne of the Comneni in Constantinople a prince of that house founded an independent state at Trebizond in Asia Minor, where he was governor (1204). The last sovereign of this house was David Comnenus (1461). A remarkable member of the family was the Princess Anna Comnena. See *Anna Comnena*.

Como (kō'mō; anciently *Comum*), capital of the province of Como, in the north of Italy (Lombardy), 24 miles N. N. W. of Milan, in a delightful valley at the S. W. extremity of Lake Como. It has a splendid marble cathedral dating from the fourteenth century, the old church of S. Fedele of the tenth century, the town-hall finished in 1215, the fine theater built in 1813. Here were born Pliny the elder and younger, and Volta the natural philosopher. Pop. 34,272.—The province of Como has an area of 1049 square miles. Pop. 576,275.

Como, LAKE OF (*Lago di Como*, anciently *Lacus Larius*), a lake in the north of Italy, at the foot of the Alps, fed and drained by the river Adda, which carries its surplus waters to the Po. It extends from southwest to northeast 30 miles, giving off towards the middle, at the promontory where stands Bellaggio, a branch running for about 13 miles southeast to Lecco, called the Lake of Lecco; greatest width 2½ miles. greatest depth 1929 feet. It is celebrated for the beautiful scenery of its shores, which are covered with handsome villas, gardens, and vineyards, mountains rising behind to the height of 7000 feet. Trout and other fish abound in the lake.

Comorin (kom'ō-rin), a cape forming the southern extremity of Hindustan (lat. 8° 4′ N., lon. 77° 35′ E.) and consisting of a low, sandy point.

Comoro Islands (kom'ō-rō), a volcanic group in the Indian Ocean, between the northern extremity of Madagascar and the continent of Africa. They are four in number: Great Comoro, Mohilla, Johanna and Mayotta; total area, about 760 sq. miles; pop. 82,000. The people are nominally Mohammedans, and are akin to the mixed races of Zanzibar. They have large flocks and herds; and the coast lands are very fertile, abounding in tropical grains and fruits. Mayotta has belonged to France since 1843, and in 1886 the others became a French possession.

Companies (kum'pa-nēs), JOINT-STOCK. See *Joint-stock Companies* and *Partnership*.

Companion (kum-pan'yun), a raised hatch or cover to the cabin stair of a merchant vessel.—*Companion Ladder*, the steps or ladder by which persons ascend to and descend from the quarter-deck.

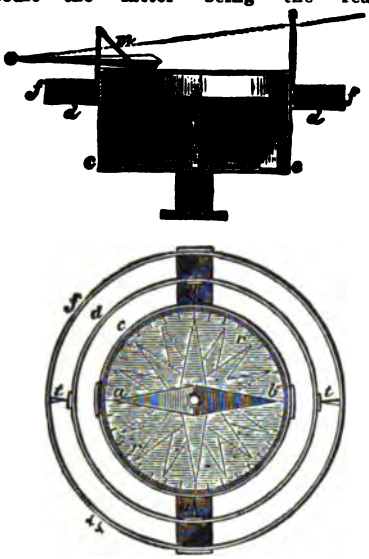
Company (kum'pa-ni), in military language, a subdivision of an infantry regiment or battalion, cor-

responding to a troop of cavalry or a battery of artillery, consisting of from 60 to 100 men and commanded by a captain.

Comparative Anatomy. See *Anatomy.*

Comparison (k o m - p ar'i-sun), DEGREES OF, in grammar, inflections of adjectives or adverbs to express degrees of the original quality, usually divided into positive, comparative, and superlative; as *strong, stronger, strongest, glorious, more glorious, most glorious.*

Compass (kum'pas), an instrument used to indicate the magnetic meridian or the position of objects with respect to that meridian, and employed especially on ships, and by surveyors and travelers. Its origin is unknown, but it is supposed to have been brought from China to Europe about the middle of the thirteenth century. As now generally used it consists of three parts: namely, the box, the card or fly, and the needle—the latter being the really



Ship's Compass.

a b, Needle. *c c*, Box. *d d*, Inner gimbal. *f f*, Outer gimbal. *i*, Pivot upon which the card is placed. *m*, Reflector. *r r*, Card. *t t*, *u u*, Supporting pivots.

essential part, and consisting of a small magnet so suspended that it may be able to move freely in a horizontal direction. The box, which contains the card and needle, is, in the case of the common *mariner's compass*, a circular brass receptacle hung within a wooden one by two concentric rings called gimbals, so fixed by the cross centers to the box that the inner one, or compass-box, shall retain a horizontal position in all motions

Compass Card.

of the ship. The circular card is divided into thirty-two equal parts by lines drawn from the center to the circumference, called points or rhumbs; the intervals between the points are also divided into halves and quarters, and the whole circumference into equal parts or degrees, 360 of which complete the circle. The four principal are called cardinal points: viz. North, South, East and West. The needle, of magnetized steel, turns freely round its center, and one of the points, by the property of the needle, will always be directed towards the north pole. There is, however, liable to be a certain deviation owing to the magnetism of the ship itself, and this is especially strong in iron ships. (See *Deviation.*) As mounted on board ship, magnetic compasses are of two kinds, dry and liquid. The *Dry Compass* consists of a very light aluminum frame carrying several light needles (magnets) and supported on a pivot. On top of the frame is the compass card. The most common form of the dry compass is that devised by Lord Kelvin (see illustration). In the *Liquid Compass* the needles are carried by a buoyant frame in a non-freezing liquid (alcohol and water). The liquid is contained in a bronze bowl with a flat glass cover.—The increased use of steel for shipbuilding, which causes difficulty in the use of magnetic instruments led to the invention of the *Gyro Compass.* The principle is that of a floating gyroscope whose fly-wheel is spun around rapidly by the help of an electric motion. When free to move in only two planes the gyroscope invariably sets parallel to the axis of the earth and thus points to the absolute north.

Compasses (kum'pa-ses), or PAIR OF COMPASSES, a mathematical instrument used for the describing of circles, measuring lines, etc. They consist simply of two pointed legs, movable on a joint or pivot, and are used for measuring and transferring distances. For describing circles the lower end of one of the legs is removed and its place supplied by a holder for a pencil or pen. —*Hair Compasses* are compasses having a spring tending to keep the legs apart, and a finely threaded screw by which the spring can be compressed or relaxed with the utmost nicety, and the distance of the legs regulated to a hair's breadth.—*Bow Compasses* are compasses having the two legs united by a bow passing through one of them, the distance between the legs being adjusted by means of a screw and nut.—*Proportional Compasses* are compasses used for reducing or enlarging drawings, having the legs crossing so as to present a pair on each side of a common pivot. By means of a slit in the legs, and the movable pivot, the relative distances between the points at the respective ends may be adjusted at pleasure in the required proportion.

Compass Plant (*Silphium laciniatum*), a composite plant growing in the prairies of the Mississippi Valley, and remarkable from the fact that its erect radical leaves stand so that their edges point almost exactly north and south, especially in midsummer. This is said to be due to the action of light, and to depend on the leaves having an equal number of stomata on either face.

Compensation (k o m - p e n-sā'shun), BALANCE, PENDULUM, a balance-wheel or a pendulum so constructed as to counteract the tendency of variations of temperature to produce variations in the rate of vibration or oscillation. This may be accomplished in various ways, as by bars formed of two or more metals of different expansibilities, so that the expansion of one counteracts the expansion of another. They are used to produce perfect equality of motion in the balances of watches and chronometers and the pendulums of clocks.

Compensation Laws. The first law for the compensation of workmen injured while in service was passed by Congress in 1908. This related to employees injured or killed while in government service, if not due to negligence or misconduct on the part of the workmen. In case of death, those dependent on the victim are to receive a sum equal to one year's wages of the deceased. In that of disability for a period over 15 days a sum is paid equal to the wages for the period, this not to exceed one year. Since 1910 laws of this character have been passed in 32 States. These vary so much in their provisions that we can only speak of them generally. The injury must not be due to carelessness or drunkenness on the part of the workman, and the payments shall bear a certain proportion to the rates of wages paid. The effect of such laws has been very useful. Devices to prevent injury by unprotected machinery have been introduced by employers, costly litigation has been avoided, and drunkenness on the part of employees has much decreased, many employers refusing to employ drinking men. Especially in the case of railroad employment, where much depends on the carefulness of train movers, intoxication has become prohibited.

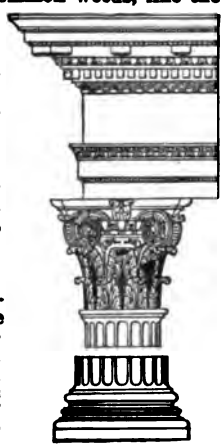
Compiègne (kōn-pe-ain), a French town, dep. Oise, on the left bank of the Oise, 45 miles N. N. E. of Paris. It has a splendid château, built by St. Louis, rebuilt by Louis XIV, and improved by Louis XV, Louis XVI, and Napoleon I. It was the autumn resort of the court of Napoleon III. In 1430 Joan of Arc was taken prisoner here by the English. Pop. 14,052.

Complexion (k o m-p l e k'shun), the color or hue of the skin, particularly of the face. The color depends partly on pigment in the deep cells of the epidermis and partly on the blood supply. The nature and color of the hair seem closely connected with the complexion, and these combined are important distinguishing marks of different races. See *Ethnology*.

Compline (kom'plin), the last of the daily canonical hours in the Roman Catholic breviary; the complement of the Vespers or evening office.

Compositæ (kom-pos'i-tē), the largest known nat. order of plants, containing over 12,000 described species of herbs or shrubs distributed all over the world. The flowers (generally called *florets*) are numerous (with few exceptions) and sessile, forming a close head on the dilated top of the receptacle; and surrounded by an involucre of whorled bracts. The flowers are monopetalous, and the order is divided into three natural groups from the form of the corolla; (1) *Tubuliflōræ*, in which it is tubular, with five, rarely four, teeth; (2) *Labiatiflōræ*, in which it is divided into two lips; and (3) *Liguliflōræ*, in which it is slit or ligulate. The stamens are inserted on the corolla, and their anthers are united into a tube (syngenesious). The style is two-cleft at the apex. The

fruit is dry and seed-like. The head of numerous florets was called by the older botanists a compound flower, hence the name. Many are common weeds, like the daisy, dandelion, thistle, etc.; many are cultivated in gardens, such as the asters, marigold, etc.; others have some economic or medicinal value, as chicory, artichoke, chamomile, lettuce, wormwood, arnica, etc.



Composite Order.

Composite (kom'pos-it) Order, in architecture the last of the five orders; so called because the capital belonging to it is composed out of those of the other orders, borrowing a quarter-round from the Tuscan and Doric, a row of leaves from the Corinthian, and volutes from the Ionic. Its cornice has simple modillions or dentils. It is called also the *Roman* or the *Italic* order.

Composition (kom-pō-zish'un), an arrangement which a bankrupt or person in pecuniary difficulties makes with his creditors, and by which he arranges to pay them a certain proportion only of the debts due. See *Bankrupt*.

Composition of Forces and Motions, in mechanics, the union or assemblage of several forces or motions that are oblique to one another into an equivalent force or motion in another direction. Thus two forces acting in the directions of the adjacent sides of a parallelogram compose one force acting in the direction of the diagonal, and if the lengths of the adjacent sides represent also the magnitudes of the forces, the diagonal will represent the magnitude of the compound force or *resultant*.

Compostella (kom-pos-tel'a). See *Santiago-de-Compostella*.

Compostel'la, Order of St. James of, an order of Spanish knights formed in the twelfth century to protect the pilgrims who flocked in vast numbers to Santiago-de-Compostella, where the relics of St. James were kept.

Composts (kom'posts), in agriculture are mixtures of various fertilizing substances. See *Manure*.

Compound Animals, animals, many of which by no means belong to the lowest types, in which individuals, distinct as regards many of the functions of life, are yet connected by some part of their frame so as to form a united whole. Such are the polyzoa and some of the ascidia.

Compounding (kom-pound'ing) or Felony, the accepting of a consideration for forbearing to prosecute; or the agreeing to receive one's goods again from a thief on condition of not prosecuting. This is an offense punishable by fine and imprisonment.

Compressed Air (kom-prest'), atmospheric air compressed by means of pumps, etc., and used in driving stationary and locomotive engines, and excavating machines; as also in working pneumatic despatch tubes, railway brakes, etc. Large railroad tunnels have been excavated by the use of compressed air motors, such as Hoosac tunnel and the Mount Cenis and others.

Compressibility (kom-pres-i-bil'i-ti), the property of bodies in virtue of which they may be pressed into smaller bulk. All bodies are probably compressible, though the liquids are but slightly so. The gases are exceedingly compressible, and may be liquefied by pressure and cold combined. Those bodies which occupy their former space when the pressure is removed are called elastic.

Compulsory Insurance, a term applied to any system of insurance enforced by a government for the benefit of its working classes. Compulsory insurance against accident has been in force for some time in Great Britain, Germany, Austria, France, Norway, Italy, and Holland. In the United States custom differs in the various states. In Germany there is a national and compulsory system of insurance against sickness, accident and old age, for all those earning less than $500 a year. In France there is a compulsory insurance against old age and invalidity. The year 1912 saw the establishment of a revolutionary system of insurance against sickness and unemployment in Great Britain.

Compurgation (kom-pur-gā'shun), a mode of defense allowed by the Anglo-Saxon law in England, and common to most of the Teutonic tribes. The accused was permitted to call a certain number (usually twelve) of men, called compurgators, who joined

their oaths to his in testimony to his innocence.

Comstock, ANTHONY, secretary of the New York Society for the Suppression of Vice, born in 1844; died September 21, 1915.

Comstock Lode (kom'stok), formerly an extremely rich metallic lode in the western part of the State of Nevada, on the eastern slope of the Virginia Mountains. To it belonged the Big Bonanza and other mines, which have yielded gold and silver to the value of over $300,000,000.

Comte (kont), ISIDORE AUGUSTE MARIE FRANÇOIS XAVIER, founder of the 'positive' system of philosophy, was born at Montpellier in 1798; died at Paris 1857. His family were zealous Catholics and royalists. He was educated at the École Polytechnique, and embraced enthusiastically the socialist tenents of St. Simon. As one of his most distinguished pupils he was employed, in 1820, to draw up a formula of the doctrines professed by the St. Simonian school, which he accordingly accomplished in his *Système de Politique Positive*. This work did not, however, meet with the approbation of St. Simon, who asserted that Comte had made a very important omission by overlooking the religious or sentimental part of human nature. In 1826 Comte commenced a course of lectures on positive philosophy but only four lectures were given when he became deranged in mind, and did not recover till the end of 1827. In 1830 he commenced the publication of his *Cours de Philosophie Positive*, which was completed in six volumes in 1842, and was freely translated into English and condensed by Harriet Martineau (two vols. 1853). (See *Positive Philosophy.*)

Comus (kō'mus), in the later Greek mythology, the god of revelry, feasting, and nocturnal entertainments, generally represented as a drunken youth. Milton's Comus is a creation of his own.

Comyn (kom'in), JOHN, Lord of Badenoch, was one of the commissioners sent to confer about the marriage of the Maid of Norway to Prince Edward of England. On the competition for the Scotch throne in 1291 Comyn put in a claim as a descendant of Donald Bane. The date of his death is uncertain, but he was alive in 1299.—His son, JOHN COMYN, called the 'Red Comyn,' was chosen one of the three guardians of Scotland, and defeated the English at Roslin in 1302. He submitted to Edward I in 1304, and was killed by Bruce in the Convent of the Minorites at Dumfries in 1306.

Con, an Italian preposition signifying *with*, and of frequent occurrence in musical phraseology; *con amore*, with feeling; *con brio*, brilliantly; *con gusto*, with taste, etc.

Conacre (kon'ā-kėr, kon-ā'kėr), a term applied to a system common in Ireland, of underletting a portion of a farm for a single crop, the rent being paid to the farmer in money or in labor.

Concan (kon'kan), a maritime subdivision of Hindustan, in the presidency of Bombay. It consists of a long belt of sea-coast, stretching from north to south for about 220 miles, with an average breadth of 35 miles, and bounded on the east by the Western Ghauts. It includes the town and island of Bombay. Area about 12,500 sq. miles; pop. 3,035,654.

Concarneau (kōn-kär-nō), a seaport, France, dep. Finistère, on an island in the bay of La Forêt. Has sardine and pilchard fisheries; a zoölogical laboratory, connected with the college of France; is much visited by artists. Pop. 7887.

Concave (kon'kāv), hollow and curved or rounded, as the inner surface of a spherical body. A surface is *concave* when straight lines drawn from point to point in it fall between the surface and the spectator; and *convex* when the surface comes between him and such lines.

Concentration (kon-sen-trā'shun), in chemistry, the act of increasing the strength of solutions. This is effected in different ways; by evaporating off the solvent, as is done in the separation of salt from sea-water; by distilling off the more volatile liquid, as in the rectification of spirit of wine; by the use of low temperatures, as, in the purification of benzol; by difference of fusibility, as in Pattinson's process for desilvering lead.

Concepcion (kon-sep-se-ōn'), a seaport of Chile, capital of a province of the same name, on the right bank of the Biobio, 7½ miles from its mouth, a well-built town, with a cathedral. Its port at Talcahuano, a small town on the Bay of Concepcion, about 8 miles distant, is one of the best in Chile. Concepcion was founded in 1550, and has suffered much from earthquakes and attacks by the Araucanians. Pop. 55,458. There are towns of the same name in Paraguay and Uruguay, of 10,000 to 12,000 each, and others of smaller size in Latin America.

Conception (con-sep'shun), the act or power of conceiving in the mind; in philosophy, that mental act or combination of acts by which an absent object of perception is brought before the mind by the imagination.

Conception, Immaculate, in the Roman Catholic Church, the doctrine that the Virgin Mary was born without the stain of original sin. This doctrine came into favor in the twelfth century, when, however, it was opposed by St. Bernard, and it afterwards became a subject of vehement controversy between the Scotists, who supported, and the Thomists, who opposed it. In 1708 Clement XI appointed a festival to be celebrated throughout the church in honor of the immaculate conception. Since that time it was received in the Roman Church as an opinion, but not as an article of faith until the year 1854, when the pope issued a bull which makes the immaculate conception a point of faith.

Conceptualism (kon-sep'tū-al-izm), in metaphysics, a doctrine in some sense intermediate between realism and nominalism. Conceptualism assigns to universals an existence which may be called logical or psychological, that is, independent of single objects, but dependent upon the mind of the thinking subject, in which they are as notions or conceptions.

Concert (kon'sert, a public or private musical entertainment, at which a number of vocalists or instrumentalists, or both, perform singly or combined.

Concertina (kon-ser-tē'na), a musical instrument invented by Professor Wheatstone, the principle of which is similar to that of the accordion. It is composed of a bellows, with two faces or ends, generally polygonal in shape, on which are placed the various stops or studs, by the action of which air is admitted to the free metallic reeds which produce the sounds. In the English concertina the compass is three octaves and three notes. The German concertina is an inferior instrument.

Concerto (kon-cher'tō), in music, a kind of composition, usually in a symphonic form, written for one principal instrument, with accompaniments for a full orchestra.

Concert Pitch. See *Pitch*.

Concession (kon-sesh'un), a permission conceded by a government to a person or company to do certain things; specially applied to grants of land, of privileges or immunities in connection with certain enterprises, such as mining, the construction of railways, canals, or the like, usually subject to fixed conditions and limitations.

Conch (kongk), a marine shell, especially a large spiral shell of a trumpet shape, and which may be blown as a trumpet, as in the practice in Hindustan and some of the Pacific islands.

Conchifera (kon-kif'ē-ra), Lamarck's name for that large class of acephalous molluscs which have shells consisting of two pieces, commonly known as *bivalves* (oyster, mussel, etc.).

Conchology (kon-kol'o-gi), the science of shells, that department of zoölogy which treats of the nature, formation and classification of the shells with which the bodies of many molluscs are protected; or the word may be used also to include a knowledge of the animals themselves, in which case it is equivalent to *malacology*. In systems of conchology shells are usually divided into three orders, univalves, bivalves and multivalves, according to the number of pieces of which they are composed. See *Mollusca*.

Conclave (kon'klāv), the place where the cardinals assemble for the election of the pope; also the electoral assembly of the cardinals themselves, Pope Gregory X, whose election had been delayed for three years, established in the council at Lyons (1274) the regulations of the conclave. The cardinals are shut up together in a particular suite of apartments in the palace where the pontiff dies, and they are supposed to have no communication with the outside world during the period of the election. The companion, either lay or clerical, whom the cardinal is allowed to take with him into the conclave during the election of a pope is called a *conclavist*. The office is one of great delicacy and trust.

Concord (kon'kord), in music, the combination of two or more sounds pleasing to the ear. Concords are the octave, the fifth, third and sixth. The two first are called *perfect*, because as concords they are not liable to any alteration by sharps or flats. The two last are called *imperfect*, as being alterable.

Concord (kon'kord), a village of Massachusetts, on the Concord River, 20 miles W. N. W. of Boston. It has a state reformatory and manufactures of harness, rubber, etc., and is a large railroad center. It was the home of Emerson, Hawthorne, Thoreau, Louisa Alcott, and other eminent writers, and is historically famous as

the scene of the first fight between the British and Americans in the Revolution, shortly after the firing on the militia at Lexington. Pop. (1920) 6461.

Concord, a city, the capital of New Hampshire, county seat of Merrimack Co., on the Merrimac River, 73 miles N. N. W. of Boston. It has interesting public edifices, and large manufactures, having water-power in abundance. Its products include cotton and woolen goods, wagons, machinery, and various others. There are quarries of fine granite, which are extensively worked. Pop. (1920) 22,167.

Concord, a city, county seat of Cabarrus Co., North Carolina, 21 miles N. E. of Charlotte. Has manufactures of cotton goods, towels, furniture, etc. The Scotia Seminary (colored) is here. Pop. (1920) 9903.

Concordance (kon-kord'ans), a book in which the principal words used in any work or number of works, as the Scriptures, Shakespere, Milton, Tennyson, Homer, etc., are arranged alphabetically, and the book, chapter and verse, or act, scene, line, or other subdivision in which each word occurs are noted; designed to assist an inquirer in finding any passage by means of any leading word which he can recollect, or to show the character of the language and style of any writer. Some of the most approved concordances in English are those of the Bible by Cruden, Butterworth, Brown and Taylor. Of non-biblical concordances, that of Mary Cowden Clarke to Shakespere deserves especially to be mentioned.

Concordat (kon-kor'dat), a convention between the pope, as head of the Roman Catholic Church, and any secular government, for the settling of ecclesiastical relations. One of the most important of the earlier concordats, that of Worms, called also the *Calixtine Concordat*, made in 1122, between Pope Calixtus II and the Emperor Henry V, has been regarded as the fundamental law of the church in Germany. Another celebrated concordat was that agreed upon between Cardinal Gonsalvi, in the name of Pius VII, and Napoleon in July, 1801. By it the head of the state had the nomination of bishops to the vacant sees; the clergy became subject in temporal matters to the civil power; all immunities, ecclesiastical courts, and jurisdictions were abolished in France, and even the regulations of the public worship and religious ceremonies and the pastoral addresses of the clergy were placed under the control of the secular authorities. Most of these provisions remain in France at the present day. Since the middle of the eighteenth century concordats have generally been adverse to the power of the popes.

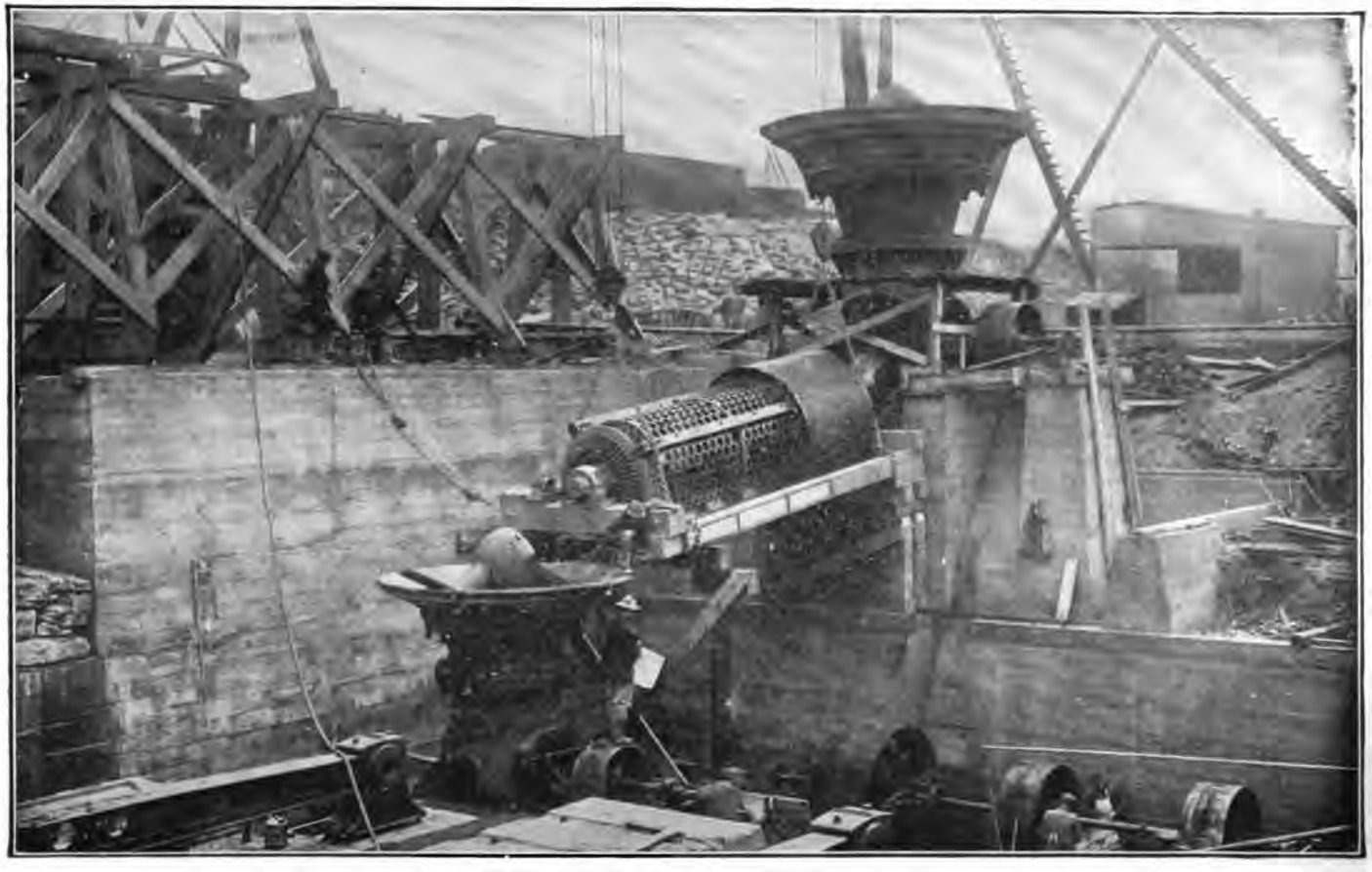
Concrete (kon'krēt), a technical term in logic, applied to an object as it exists in nature, invested with all its attributes, or to the notion of such an object. Concrete is opposite to abstract. The names of individuals are concrete; those of classes, abstract. A concrete name is a name which stands for a thing; an abstract name is a name which stands for the attribute of a thing.

Con'crete, a composition used in building, consisting of hydraulic or other mortar mixed with gravel or stone chippings about the size of a nut. It is used extensively in building under water, for example, to form the bottom of a canal or sluice, or the foundation of any structures raised in the sea; and it is also frequently used to make a bed for asphalt pavements, or to form foundations for buildings of any kind. It has also come extensively into use as the material with which the walls of houses are built, the concrete being firmly rammed into molds of the requisite shape, and then allowed to set. In large buildings a material known as *reinforced concrete* has come into use, the reinforcement consisting of strong steel rods around which the concrete is poured and which add very greatly to its strength. Many very large buildings have been erected in this manner, and the use of concrete as a building material is rapidly growing.

Concretions (kon-krē'shuns), MORBID, in animal economy, hard substances that occasionally make their appearance in different parts of the body, as well in the solids as in those cavities destined to contain fluids. They are usually named according to the parts of the body in which they occur, as *pineal, salivary, pancreatic, hepatic, pulmonary, urinary* concretions, etc. Their composition is equally various, but the most common constituents are phosphates, urates, or other salts, in combination with mucus, albumen, fibrin, and other organic matter. See *Calculus*.

Concubinage (kon-kū'bi-nāj), sexual cohabitation of a man without legal marriage. It was permitted among the ancient Hebrews and the Greeks without limitation; but among the Romans in the case of unmarried men concubinage was limited by the Lex Julia and Lex Papia Poppæa to a single concubine of mean descent.

Concurrent Jurisdiction (kon-kur'-ent), the jurisdiction of differ-



ROCK-CRUSHING PLANT FOR CONCRETE MATERIAL

The upper machine crushes the larger rock to about the size of egg coal, delivering it to the rotary screen which is just being lowered into place. This screens out dust and small pieces, delivering the broken stone to the smaller crusher below, which breaks it to concrete size.

ent courts authorized to take cognizance of the same kind of case. In criminal cases the court which first takes up a case has the right of prevention, that is, of deciding upon that case exclusive of the other courts which but for that right would have been equally entitled to take cognizance of it. In civil cases it lies with the suitor to bring his cause before any court he pleases which is competent to take it up.

Concussion of the Brain (kon-kush'-un), a term applied to certain injuries of the brain resulting from blows and falls, though unattended with fracture of the skull. Stupor or insensibility, sickness, impeded respiration, and irregular pulse are the first symptoms, and though these may subside there is always for a time more or less risk of serious inflammation of the brain setting in.

Condamine, CHARLES MARIE DE LA. See *La Condamine.*

Condé (kōn-dā), town and fortress of France, dep. Nord, at the confluence of the Hayne and Scheldt. It gave their title to the Condé family. Pop. (1906) 2701.—For another Condé see *Condé-sur-Noireau.*

Condé, LOUIS DE BOURBON, founder of the house of, born in 1530; killed after battle of Jarnac, 1569. See *Bourbon.*

Condé, LOUIS DE BOURBON, PRINCE OF (the *Great Condé*), a famous general, born in 1621. In 1641 he married a niece of Cardinal Richelieu. His defeat of the Spanish at Rocroi, in 1643, was followed, in 1645, by his defeat of Mercy at Nordlingen, and by his capture of Dunkirk in 1646, the year in which he inherited his father's title. During the troubles of the Fronde he at first took the side of the court; but believing himself to be ill requited by Mazarin he put himself at the head of the faction of the *Petits Maîtres,* and was imprisoned for a year by Mazarin (1650). On his release he at once put himself at the head of a new Fronde, entered upon negotiations with Spain, and, his attack on Paris being indecisive, retired to the Netherlands, where he was appointed generalissimo of the Spanish armies. In this capacity he unsuccessfully besieged Arras in 1654; but he was more fortunate at Valenciennes in 1656, and at Cambrai in 1657. In 1658 he was defeated before Dunkirk by Turenne, but was restored to his rank in France after the peace of 1659. In 1668 he accomplished the reduction of Franche Comté in three weeks; and in 1674 he defeated the Prince of Orange at Senef. His successes over Montecuculi in Alsace in 1675 closed his military career. Four years later he retired to Chantilly, near Paris, and died at Fontainebleau in 1687.

Condé, LOUIS JOSEPH DE BOURBON, PRINCE OF, born at Chantilly in 1736; only son of the Duke of Bourbon and the Princess of Hesse-Rheinfels. He distinguished himself in the Seven Years' war, and in 1762 defeated the Prince of Brunswick at Johannisberg. On the outbreak of the revolution in 1789 he emigrated, and in 1792 formed, at Worms, a corps of emigrant nobility, which first joined the Austrian, and, in 1795, the English service. In 1797 he entered the Russian service, but in 1800, after the separation of Russia from the coalition, reëntered for a time the English army. He lived in England till 1813, returned to Paris in 1814, received various honors, and attended the king in his flight to Ghent. On his return he was appointed president of a bureau of the chamber of peers, but soon after retired to Chantilly. He died at Paris in 1818.

Condensation (kon-den-sā'shun), in chemistry and physics, the act of reducing a gas or vapor to a liquid or solid form. *Surface condensation,* a mode of condensing steam by bringing it in contact with cold metallic surfaces in place of by injecting cold water.

Condensed Milk (kon-denst'), milk preserved by evaporating part of its moisture, mixing with refined powdered sugar, and packing in air-tight cans hermetically sealed; the sugar may also be omitted.

Condenser (kon-den'ser), a syringe by which air is compressed into a receiver. Also a vessel in which aqueous or other vapors are condensed by cooling into the liquid form.

Condensing Steam-Engine. See *Steam-engine.*

Condé-sur-Noireau (kōn-dā-sür-nwä-rō), a town of France, dep. Calvados, at the confluence of the Noireau and Drouance. Chief manufacture, cotton. Pop. 5709.

Condillac (kōn-dē-yàk), ÉTIENNE BONNOT DE, a French philosopher born in 1715. His *Essai sur l'Origine des Connaissances Humaines* (1746), in large part a polemic against abstract methods of philosophizing, struck the keynote of his system, and his *Traité des Systèmes* (1749) continued the condemnation of all systems not evolved from experience, from sensation. In 1754 appeared his *Traité des Sensations,* and

in 1755 his *Traité des Animaux*, a criticism on Buffon. The sagacity and clearness of his writings led to his appointment as tutor to the nephew of Louis XV, the infant Duke of Parma, for whom he wrote in 1755 his *Cours d'Etudes*, including a grammar, an *Art d'Ecrire*, an *Art de Raisonner*, an *Art de Penser*, and a general history. His work *Le Commerce et le Gouvernment* appeared in the same year as the *Wealth of Nations* (1776), and was no unworthy companion to it. In 1768 he was elected to the Academy. He died shortly after the publication of his *Logic* in 1780, his *Langue des Calculs* being published posthumously in 1798.

Conditional Immortality (con-dish'-un-al), a doctrine held by certain religious sects, which hold that immortality is dependent upon certain conditions of belief and conduct, and replace the tenet of future punishment by that of annihilation. This doctrine has been advanced at intervals from ancient times, and in our day it has many advocates.

Conditioned and Unconditioned, in philosophy, terms introduced by Sir William Hamilton. The Unconditioned is regarded by Sir William Hamilton as a genus including two species: the Infinite, or the unconditionally unlimited, and the Absolute or the unconditionally limited; and the thesis which he maintains and expounds, and which forms one of the leading doctrines of his philosophical system, is that the Unconditioned, as thus explained, is entirely unthinkable. The mind is confined, in point of knowledge though not of faith, to the limited and conditioned—the Conditioned being the mean between two unconditionates, mutually exclusive and equally inconceivable, but of which, on the principles of contradiction and excluded middle, *one must be admitted as necessary*. Thus infinite space is inconceivable by us, while at the same time it is equally impossible to us to conceive of space as finite: yet one of these must be admitted necessary, and our conception is in some sense a mean between the inconceivables. The doctrine was applied by Mansel to determine the limits of religious thought.

Condom (kon-dōn), a town of s. w. France, dep. Gers, on a height above the Baïse. It has a dilapidated cathedral, now the parish church. A considerable trade is carried on. Pop. (1906) 4046.

Condonation (k o n - dō - nā'shun), in law, forgiveness of injury. In an action for divorce on the ground of adultery it is a legal plea in defense.

Condor (kon'dor; Spanish name, from Peruvian *cuntur*), a S o u t h American bird, the *Sarcorhamphus gryphus*, one of the largest of the Vulturidæ or vulturine birds. In its essential features it resembles the common vultures, differing from them mainly in the large cartilaginous caruncle which surmounts its beak, and in the large size of its oval and longitudinal nostrils placed almost at the extremity of the cere. Despite the many stories of its gigantic proportions,

Condor (*Sarcorhamphus gryphus*).

Humboldt met with no specimens whose wings exceeded 9 feet in expanse, though it has occasionally been known to attain an expanse of 14 feet. It is found in greatest numbers in the Andes chain frequenting regions from 10,000 to 15,000 feet above the level of the sea, where they breed, depositing their two white eggs on the bare rock. They are generally to be seen in groups of three or four, and only descend to the plains under stress of hunger, when they will successfully attack sheep, goats, deer and bullocks. They prefer carrion, however, and, when they have opportunity, gorge themselves until they become incapable of rising from the ground, and so become a prey to the Indians. The king-vulture (*S. Papa*) is another bird of the same genus.

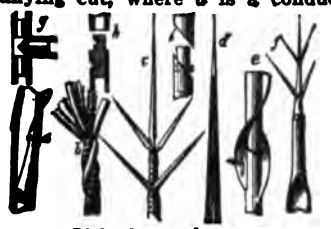
Condorcet (kon-dor-sā), M A R I E J E A N A N T O I N E N I C O L A S D E C A R I T A T, M A R Q U I S D E, an eminent French writer, born in 1743. At the age of twenty-one he presented to the Academy of Sciences an *Essai sur le Calcul Intégral*, and in 1767 his *Mémoire sur le Problème des Trois Points* appeared, both being afterwards united under the title of *Essais d'Analyse*. The merit of this work gained for him in 1769 a seat in the Academy of Sciences, of which, after the publication of his *Eloges des Académiciens morts avant 1699* (1773), he was appointed perpetual secretary (1777). In

1777 his *Theory of Comets* gained the prize offered by the Academy of Berlin; he enriched the *Transactions* of many learned societies; and took an active part in the *Encyclopédie*. During the troubles of the first French revolution his sympathies were strongly engaged on the side of the people. By the city of Paris he was elected deputy to the legislative assembly, of which he was soon appointed secretary, and in February, 1792, president. On the trial of Louis he was in favor of the severest sentence not capital; at the same time he proposed to abolish capital punishments, except in case of crimes against the state. The fall of the Girondist party, May 31, 1793, prevented the constitution which Condorcet had drawn up from being accepted, and as he freely criticised the constitution which took its place he was denounced as being an accomplice of Brissot. Madame Verney, a woman of noble feelings, secreted him for eight months, during which he wrote his *Esquisse d'un Tableau Historique des Progrès de l'Esprit Humain*. Lest he should endanger her safety, however, he left the house secretly in opposition to her wishes, fled from Paris, and wandered about till arrested and thrown into prison, where, March 28, 1794, he was found dead on the floor, having apparently swallowed poison.

Condottieri (k o n - d o t-tē-ā'rē), an Italian name given to the captains of those bands of mercenary soldiers who, in the fourteenth and fifteenth centuries, hired themselves out to carry on the petty wars of the Italian states. Montreal d'Albarno, a gentleman of Provence, was the first to give definite organization to a lawless band of this kind, and many of them attained a considerable size and power. One of the most noted was the company of Sforza Attendolo, whose son made himself Duke of Milan. For the most part, these mercenaries were good soldiers and splendidly equipped, but rapacious and cruel to all but their own class.

Conduction. See *Heat*.

Conductor (kon-duk'tur), or LIGHTNING-CONDUCTOR, an instrument by means of which either the electricity of the clouds, the cause of lightning, is conducted without explosion into the earth, or the lightning itself is received and conducted quietly into the earth or water without injuring buildings, ships, etc. It was invented by Benjamin Franklin about 1752, and met with speedy general adoption. It usually consists of a stout iron rod with one or more points at the top, the lower end being metallically connected with thick strips of copper which are carried into the ground to a considerable depth and terminated, if possible, in water or in wet earth. Various other forms of conductors have been introduced, such as are shown in the accompanying cut, where *a* is a conductor



Lightning-conductor.
a b c, Various forms of Rods. *c d f*, Various forms of Tips. *g h i*, Various forms of Attachments.

consisting of metallic strips joined together, *b* a conductor of copper wires intertwined with iron rods, *c* a conductor consisting of a metallic strip forming a tube with spiral flanges. Various kinds of tips are also in use, as will be seen in the cut, *d* being formed of several metals enclosed the one within the other, the most fusible being outside; *g*, *h*, *i* show how in some cases successive sections of rods are connected.

Conduit (kon'dit), a line of pipes or an underground channel of some kind for the conveyance of water, electric wires, etc.

Condyle (kon'dil; Gr. *kondylos*), in anatomy, a protuberance on the end of a bone serving to form an articulation with another bone; more especially applied to the prominence of the occipital bone for articulation with the spine.

Condy's Fluid, a preparation of permanganate of potash which is largely used as a deodorizer and disinfectant in fevers, etc. It is also employed as a gargle in diphtheria and other throat affections, and is especially valuable for cleansing ulcers and sores.

Cone (kōn), as used in geometry, generally means a right circular cone, which may be defined as the solid figure traced out when a right-angled triangle is made to revolve round one of the sides that contain the right angle. A more comprehensive definition may be given as follows:—Let a straight line be held fixed at one point, and let any other point of the line be made to describe any closed curve which does not cut itself: the solid figure traced out is a cone. When the curve which the second point describes is a circle, the cone is a right

circular cone. The cubical content of a right circular cone is one-third of that of a cylinder on the same base and of the same altitude, and is therefore found by multiplying the area of the base by the altitude, and taking one-third of the product. See also *Conic Sections*.

Cone, in botany, a dry compound fruit, consisting of many open scales, each with two seeds at the base, as in the conifers; a strobilus.

Conegliano (ko-nel-yä'nō), a town of Italy, province of Treviso, 28 miles N. of Venice. It has a castle and cathedral with paintings by Cima da Conegliano. Manufactures: silk and woolen cloths. Pop. 10,000.

Cone-shell. See *Conus*.

Conessi-bark (kon-es'si), the bark of *Wrightia antidysenterica*, an apocynaceous plant of India, used as a tonic, a febrifuge, and an astringent in diarrhœa.

Coney Island, a small island 9 miles southeast of New York, at the west end of Long Island, a popular seaside resort, about one hour by trolley from Manhattan City Hall. Here New York City has undertaken the creation of a great public seaside park. As many as 500,000 people often visit Coney Island in a single day during the summer.

Confederate States, the name given to the eleven Southern States of the American Union which attempted to secede on the election of Abraham Lincoln, the Republican candidate, to the presidency in November, 1860, thus leading to the great Civil War which lasted till 1865. See *United States*.

Confederation of the Rhine, the league of Germanic states formed by Napoleon Bonaparte in 1806, and including Bavaria, Wurtemberg, Baden, Hesse-Darmstadt, the Kingdom of Westphalia, etc. It extended over 125,160 sq. miles, and comprised 14,608,877 inhabitants. The princes undertook to raise collectively a large body of troops in event of war, and established a diet at Frankfort; but the failure of Napoleon's Russian campaign of 1812 shook the structure, and the league soon after broke up. It was succeeded by a new league, the Germanic Confederation.

Conference (kon'fẽr-ens), (1) a meeting of the representatives of different foreign countries for the discussion of some question. (2) A meeting between delegates of the two houses of a legislative body called to discuss the provisions of a bill with regard to which they are disagreed, with the object of effecting an agreement between them. (3) The annual meeting of the Methodist Episcopal Church for deliberation on its affairs.

Confervaceæ (kon-fer-vā'se-ē), a family of marine or fresh-water algæ having green fronds which are composed of articulated filaments simple or branched. The cells are shortish and cylindrical, and they are reproduced not by conjugation, but by zoöspores formed from the cell-contents and furnished with two or four cilia. The typical genus *Conferra* is found, either attached to various bodies or floating swollen up with bubbles of gas, in dense masses on ponds. The well-known marine delicacy, layer (*Porphyra laciniata* and *P. vulgaris*), with the green laver (*Ulva latissima*), belongs to this tribe of plants.

Conferva (*Cladophora nuda*). a, branched filament magnified.

Confession (kon-fesh'un), a term sometimes applied to a profession of faith; for instance, the Confession of Augsburg. It sometimes also signifies a religious sect; as the three Christian confessions—the Roman Catholic, the Lutheran and the Calvinistic. *Confiteor* (I acknowledge) is the confession which the Catholic priests make before the altar when beginning mass or public worship.

Confession, Auricular (aw-rik'ū-lar), in the strictest sense, the disclosure of sins to the priest at the confessional, with a view to obtain absolution for them. The person confessing is allowed to conceal no sin of consequence which he remembers to have committed, and the father confessor is bound to perpetual secrecy. The practice of a public acknowledgment of great sins was altered by Pope Leo the Great, in 450, into a secret one before the priest, and the fourth general Lateran council (1215) ordained that every one of the faithful, of both sexes, come to years of discretion, should privately confess all their sins at least once a year to their own pastor, an ordination still binding on members of the Roman Catholic Church. Confession is a part of the sacrament of penance.

Confessional (kon-fesh'un-al), in Roman Catholic churches and chapels, a kind of enclosed seat in which the priest sits to hear

persons confess their sins. The confessional is often not unlike a sentry-box, the priest sitting within and the penitent

Confessional, Cathedral of St. Gudule, Brussels.

kneeling without and speaking through an aperture. Many confessionals are in three divisions or compartments, the center, which is for the reception of the priest, being closed half-way up by a dwarf door, and having a seat within it. The side compartments, which communicate with the center by grated apertures, are for the penitents.

Confession of Augsburg. See *Augsburg Confession.*

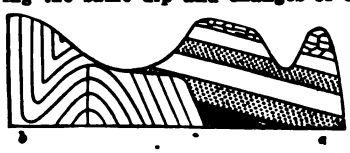
Confession of Faith, a statement of religious beliefs, a kind of elaborate creed. (See *Creed.*) What is most distinctively known by this name is the document prepared by the Assembly of Divines which met at Westminster in obedience to an ordinance of Parliament issued June 12, 1643. The whole number of the assembly amounted to 174 members, mostly Puritans, thirty-two being members of Parliament. There were also six Scottish commissioners appointed to consult and deliberate, but not to vote. One of the chief results of the deliberations was the framing of the Confession of Faith, which, on the return of the Scottish commissioners, was adopted by the Assembly of the Church of Scotland, August 27, 1647.

Confidential Communication, in law, a communication made by one person to another which the latter cannot be compelled to give in evidence as a witness. Generally all communications made between a client and his agent, between the agent and the counsel in a suit, or between the several parties to a suit, are treated as confidential. The privilege of confidentiality does not extend to disclosures made to a medical adviser, and in England it has been decided also that confessions made to a priest are not to be treated as confidential.

Confirmation (kon-fėr-mā'shun), the ceremony of laying on of hands by a bishop in the admission of baptized persons to the enjoyment of Christian privileges, the person confirmed then taking upon himself the baptismal vows made in his name. It is practised in the Greek, Roman Catholic, Lutheran and English churches. In other Protestant churches a public confession of faith before the first communion takes the place of the rite. Confirmation is one of the seven sacraments of the Roman Catholic Church.

Confiscation (kon-fis-kā'shun), the act of condemning as forfeited, and adjudging to the public treasury, the goods of a criminal in part punishment of a crime.

Conformable (kon-for'ma-bl), in geology, lying in parallel or nearly parallel planes, and having the same dip and changes of dip;



Conformable Strata *a* and *b*, Unconformable at *c*.

said of strata, the opposite term from *unconformable.*

Confucius (kon-fūsh'yus), or KONG-FU-TSE (signifying, 'the teacher, Kong'), the famous Chinese sage, born about 550 B.C. in the province of Shantung, then belonging in part to the small vassal kingdom of Lu. His father, Shuhliang-heih, who was of royal descent, died three years later, and the boy was reared in comparative poverty by his mother, Chingtsai. At the age of seventeen he was made inspector of corn-markets, at nineteen he married, and after about four years of domesticity, in which a son and two daughters were born him, he commenced his career as a teacher. In 517 B.C. he was induced by two members of one of the principal houses in Lu, who had joined his band of disciples, to visit the capital with them, where he had interviews with Lao-tze, the founder of Taouism. Though temporarily driven from Lu to Tsi by a revolution, he soon returned thither with an increasing following, and at the age of fifty-two was made chief magistrate of the city of Chung-too. So striking a reformation was effected by him that he was chosen

for higher posts, became minister of crime, and with the aid of two powerful disciples elevated the state of Lu to a leading position in the kingdom. Its marquis, however, soon after gave himself up to debauchery, and Confucius became a wanderer in many states for thirteen years. In 483 he returned to Lu, but would not take office. The deaths of his favorite disciples Yen Hwin and Tze-lu in 481 and 478 did much to bring about his own, which took place in the latter year. Confucius left no work detailing his moral and social system, but the five canonical books of Confucianism are the *Yih-king*, the *Shu-king*, the *Shi-king*, the *Le-king* and the *Chun-tsiew*, with which are grouped the 'Four Books,' by disciples of Confucius, the *Ta-hëo* or 'Great Study,' the *Chung-Yung* or 'Invariable Mean,' the *Tun-yu* or 'Philosophical Dialogues,' and the *Hi-tse*, written by Meng-tse or Mencius. The teaching of Confucius has had, and still has, an immense influence in China, though he can hardly be said to have founded either a religion or a philosophy. All his teachings was devoted to practical morality and to the duties of man in this world in relation to his fellowmen; in it was summed up the wisdom acquired by his own insight and experience, and that derived from the teaching of the sages of antiquity. It is doubtful if he had any real belief in a personal god.

Congé d'Elire (kōŋ-zhā dā-lēr), the Norman French for 'leave to elect,' designates the sovereign's license authorizing the dean and chapter of a vacant see in England to proceed with a new election. Though nominally choosing their bishop, yet the dean and chapter are bound to elect, within a certain time, such person as the crown shall recommend, otherwise they incur the penalties of a *præmunire*.

Conger-eel (kong'gėr), a genus of marine eels characterized by a long dorsal fin beginning near the nape of the neck, immediately above the origin of the pectoral fins, and by having the upper jaw longer than the lower. The best-known member of this genus is the *Conger vulgāris*, sometimes as thick as a man's thigh, frequently attaining a length of 10 feet and more than 100 lbs. in weight. It is pale brown above, grayish white below, with whitish dorsal and anal fins fringed with black. Its flesh is eaten, but is somewhat coarse.

Congestion (kon-jest'yun), in medicine signifies an excessive accumulation of blood in an organ, which thereby becomes disordered. Among the causes of congestion are the different periods of development of the human body, each of which renders some particular organ unusually active; diseased conditions; and the accidental exertions of certain organs. Again, if the current of blood to one organ is checked the blood tends to accumulate in another; and the vessels which bring back the blood to the heart—that is, the veins—are sometimes obstructed, as by external pressure, by tumors, etc. Congestion sometimes lasts a short time only; but if not early cured, and its return, which would otherwise be frequent, prevented, it is only the beginning of other diseases. Sometimes it terminates in bleeding, which is a remedy for it; sometimes it increases into inflammation; sometimes it becomes a chronic disease, that is, the blood accumulates for a long time and expands the veins, the expansion becomes permanent, and dropsy may result.

Congleton (kon'g'l-tun), a market town of England, Cheshire, in a deep valley on the Dane, 22 miles S. of Manchester. It has cotton and silk manufactures, the latter forming the principal industry. Pop. (1911) 11,310.

Conglomerate (kon-glom'er-āt), a term applied by geologists to rocks consisting mostly of water-worn pebbles connected together by a matrix of siliceous, calcareous, or other cement, often called also *plum-pudding stone*.

Congo (kon'gō), formerly ZAIRE, one of the great rivers of the world, in Southern Africa, having its embouchure in the South Atlantic. The mouth of the river was known to the Portuguese in 1485, but the lower part of its course was first explored by an English expedition under Captain Tuckey, which, in 1816, ascended it for about 172 miles. In 1867, however, Livingstone discovered a considerable river called the Chambesi, rising in the Chibalé Hills, and having followed it to Lake Bangweolo traced it thence as the Luapula to Lake Moero, and thence again as the Lualaba to Nyangwe. From this point its exploration was taken up in 1876-77 by Stanley, who proved its identity with the Congo. It carries more water to the ocean than the Mississippi, its volume being next to that of the Amazon. Its total length is perhaps 3000 miles. Its chief tributaries are the Aruwimi and the Mobangi from the right, and the Ikelemba and Kwa from the left, which latter represents the collected waters of immense rivers from the south such as the Kassai, the Kwango, etc. It is navigable for about 110 miles from its mouth, after which the navigation is interrupted by cataracts. See next article.

Congo, Belgian, formerly CONGO FREE STATE, on the river Congo, in South Central Africa, stretching by a kind of narrow neck of territory to the river's mouth, but expanding inland so as to cover an immense area, mainly lying south of the river. The obvious advantages of the Congo as a waterway in opening up the continent led to the formation at Brussels in 1878 of a Comité d'Études du Haut Congo, under the patronage of Leopold II, having as its aim the internationalization and development of the Congo area. Under its auspices Stanley returned in 1879 (see preceding article) to open up the river and form a free state under European auspices. He established a first station at Vivi, the limit of maritime navigation, 110 miles above the mouth of the river, constructed roads past the Yellala and Livingstone cataracts, and hauled steamers up to the higher reaches of the Congo, where in 1882 the station of Leopoldville was formed on Stanley Pool. Of the 223 miles between Vivi and Leopoldville only 88 are navigable water; but from the latter station to Stanley Falls the Congo itself is continuously navigable for 1000 miles, to which its great affluents already explored add no fewer than 5000 miles of serviceable waterway. Above the Stanley Falls station (destroyed by Arab slave-dealers in November 1886) the river is again navigable for a distance of 385 miles to Nyangwe, which is about 1300 miles from the Chambezi sources. The work having been thus initiated by Stanley, and the feasibility of the project made manifest, the association in 1884-85 entered into treaties with all the European powers and the United States for the recognition of its sovereign power. The boundaries of the new CONGO FREE STATE were settled at the same time, it being agreed that the basin of the Congo and its tributaries should be free to all nations, that no duties should be levied on imports, and that the slave trade should be suppressed. The central government was at Brussels, consisting of the King of Belgium as sovereign, and three departmental chiefs. Railways have been constructed around the lower rapids and elsewhere along the stream, so that there is now continuous communication by rail and water from the river's mouth to Kalengwe Falls, a distance of 2500 miles. Rubber is the leading commercial product of the state, coffee and cacao are successfully grown, and ivory, copal and palm oil and kernels are of importance. The minerals include tin, gold, platinum, iron, coal and palladium. The cruel exploitation of the natives in the collection of rubber led in the early twentieth century to indignant protests from travelers and others, and in 1908 King Leopold transferred the control of the state to the Belgian government. Various reforms have since been authorized. Area estimated at 920,000 sq. miles; pop. 8,000,000 to 15,000,000.

Congregationalists (kon-gre-gā'-shun-al-ists), or INDEPENDENTS. The distinctive principle of Congregational polity is that every congregation is entitled 'to elect its own officers, to manage all its own affairs, and to stand independent of, and irresponsible to, all authority, saving that only of the Supreme and Divine Head of the Church, the Lord Jesus Christ.' Congregationalism denies that there is any authority in Scripture for uniting the churches of a nation or province into one corporation to be ruled by bishops, superior to the pastors of particular congregations, or by a presbytery or synod. This is it which distinguishes Congregationalism from Episcopacy and from Presbytery. As early as the days of Queen Elizabeth Independents, or Brownists, as they were also named after Robert Browne, were numerous, and punishments of banishment and even death were inflicted upon some. Finally, large numbers of them retired to Holland and to America. By the Act of Uniformity in 1662 the Independents were subjected to much suffering. The Revolution of 1688, and the passing of the Toleration Act in 1689, brought them relief. Efforts were made about this time to bring about an accommodation between them and the English Presbyterians, but with little result. In 1730 certain Presbyterians, Baptists, and Independents formed themselves into a united body, under the name of the Three Denominations. The Independents are the largest dissenting body in England except the Wesleyan Methodists.

The history of American Congregationalism in its early years is practically that of the origin of New England, beginning with the arrival in 1620 of the first group of Puritans. In 1643 the four congregational colonies of Plymouth, Massachusetts Bay, Connecticut and New Haven formed a confederacy. In 1636 they founded Harvard College to provide training for their ministers, and ten years later missionary work was begun among the Indians. In 1914 there were in the United States 6100 churches with 748,000 communicant members.

Congress, the name given to the legislative assembly of the United States of America, consisting of

two houses—a Senate and a House of Representatives. The Senate consists of two members elected by the legislature of each state for a period of six years, one-third of whom are elected every two years. The Representatives in the lower house are elected by the people of the several states every two years, and their number varies in each state in proportion to the population as determined by the decennial census. The united body of senators and representatives for the two years during which the representatives hold their seats is called one Congress. See *United States.*

Congressional Apportionment, the number of people appointed by act of Congress to be represented by one Representative in Congress. The number fixed in the Constitution was 30,000 with the provision that each State should have at least one Representative. This number was increased at each successive census, in order that the membership of the House should not become unwieldily large. The successive ratios since the formation of the government have been as follows:

1789–1792 based on the Constituton			30,000
1792–1803 based on Census of		1790,	33,000
1803–1813 "	"	1800,	33,000
1813–1823 "	"	1810,	35,000
1823–1833 "	"	1820,	40,000
1833–1843 "	"	1830,	47,700
1843–1853 "	"	1840,	70,680
1853–1863 "	"	1850,	93,420
1863–1873 "	"	1860,	127,381
1873–1883 "	"	1870,	131,625
1883–1893 "	"	1880,	151,912
1893–1903 "	"	1890,	173,901
1903–1913 "	"	1900,	194,182
1913–1923 "	"	1910,	211,877

The change under the 1910 census increases the membership of the House from 386 to 435, Arizona and New Mexico, which were admitted in 1912, each being given one Representative.

Congressional Library (kong-gresh'-un-al), the library of the United States Congress, established in 1800. It now numbers nearly two million books and pamphlets, exclusive of maps, charts, photographs, etc. Copies of every work published and copyrighted in the United States must be sent to it, and it contains large numbers of duplicates. In 1897 it was removed from the Capitol to a magnificent building erected for it in the vicinity.

Congressman-at-large, a member of the United States House of Representatives who is elected by the voters of a whole state instead of by districts.

Congreve (kon'grēv), WILLIAM, an English dramatist, born 1670, educated at Kilkenny, and at Trinity College, Dublin, from which he entered the Middle Temple, London. A novel entitled the *Incognita*, under the pseudonym of Cleophil, was followed, at the age of twenty-one, by his comedy of the *Old Bachelor*, the success of which procured for him the patronage of Lord Halifax, who made him a commissioner for licensing hackney-coaches; soon after gave him a place in the pipe office; and finally conferred on him a very lucrative place in the customs. He afterwards received an additional sinecure in the appointment of secretary to the island of Jamaica. His next play, the *Double Dealer*, was less successful; his third comedy, *Love for Love*, and his tragedy *The Mourning Bride* (1679), were both popular; but after the cold reception of his *Way of the World* in 1700, he ceased altogether to write for the stage. He, however, continued to write occasional verses on public subjects; and in 1710 published a collection of his plays and poems, which he dedicated to his early patron, Lord Halifax, to whose person and party he remained attached in all fortunes. He died in 1729. His plays belong to the artificial school of comedy, which aimed rather at the production of a sustained flow of wit than at the precise delineation of character.

Congreve, SIR WILLIAM, inventor of the Congreve rocket, was born in England in 1772, and entered the army, from which he retired in 1816 with the rank of lieutenant-colonel of artillery and entered the House of Commons. He invented the rocket about 1804. It was first used in active service in the attack on Boulogne, 1806, and on Copenhagen, 1807. He took out patents also for the manufacture of gunpowder and of bank-note paper, and wrote treatises on the mounting of naval ordnance and on the hydro-pneumatic lock. He died at Toulouse in 1828.

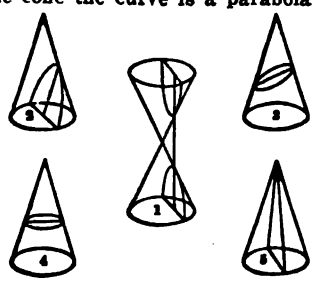
Congreve Rocket. See *Rocket.*

Coni, or CU'NEO (kō'nā-ō), a town of North Italy, capital of the province of Coni, charmingly situated on a hill, at the confluence of the Stura and the Gesso, 47 miles S. Turin. Formerly all merchandise passing from the seaport of Nice to Lombardy, Switzerland and Germany went by this route, but the railway has confined its trade to Turin and neighboring towns. It has manufactures of silks and woolens. Pop. 27,065.

Conia, CONIINE ($C_8H_{17}N$), a volatile alkaloid, the active

poisonous principle of *Conium maculatum* (spotted hemlock), nat. order Umbelliferæ. It exists in all parts of the plant, but especially in the not quite ripe seed. When pure it is a colorless, oily liquid, specific gravity 0.878, changing by exposure to air to a brown fluid, and ultimately to a resinous, bitter mass, insoluble in water but soluble in alcohol, and when purified yielding a jelly with a butyric odor. It has a nauseous taste and very disagreeable odor, sharp and choking when strong, but in small quantity like the odor of mice. It is exceedingly poisonous, appearing to cause death by inducing paralysis of the muscles used in respiration. It is antispasmodic and relaxant.

Conic Sections (kon'ik), three curves, the hyperbola, the parabola, and the ellipse, so called because they are formed by the intersection of the surface of a cone with planes that cut the cone in various directions. If the cutting-plane be parallel to the axis the curve formed is the hyperbola (1); if parallel to the slope of the cone the curve is a parabola (2);



Conic Sections.

if passing through both sides of the cone obliquely the section is an ellipse (3). A section perpendicular to the axis of the cone forms a circle (4), which may also be considered one of the conic sections. A perpendicular plane through the apex gives a triangle (5).

Conidia (kon-id'i-a), in botany, the simple, dustlike, asexual reproductive cells produced on some lichens and fungi, as in the potato-blight.

Coniferæ (kō-nif'e-rē), the pines, firs, and their allies, a natural order of gymnospermous exogens, the essential character of which consists in the manner in which the ovules, not enclosed in an ovary, receive directly the action of the pollen without the intervention of a stigma. The ovules in these plants are borne on scales or modified leaves, which are spread out, not folded, and generally grouped in such a manner as to form a *cone* composed of a greater or smaller number of these leaves, of which only a portion may be fertile and bear ovules. The disposition of the ovules in relation to these scales permits of a division of the Coniferæ into three distinct families or tribes. In the *Cupressineæ*, which include the juniper, cypress, etc., the cones are formed of simple scales, each of which bears towards the base of its superior surface the ovules erect and sessile. The second family, *Abietineæ*, has, in place of simple scales, scales actually double or formed of two parts; the lower one usually designated the bract: the other bearing at its base the ovules reversed. This family includes the pines, firs and larches, the araucarias, wellingtonias, dammaras, etc. In these two families the ovules are completely covered by the scales which constitute the cones, which unite after fecundation and enclose the seed till their maturity. In the *Taxineæ*, which constitute the third family, the scales are short, imperfect, and partly sterile, and neither cover the ovules at the period of fecundation nor at that of maturation. The ovules are usually set in the same manner as in the *Cupressineæ*. The yew, the gingko, etc., belong to this family. The Coniferæ are found in large forests in the north of Europe and America, and are of great importance as timber trees. They abound also in resinous juices and yield turpentine, pitch, tar, succinic acid, etc. The leaves are usually alternate, and awl or needle shaped, the naked flowers are monœcious or diœcious, the male flowers being in deciduous catkins, the female in cones.

Coniine (kō'nī-in). See *Conia*.

Conirostres (kō-ni-ros'trēs), in ornithology, a subdivision of the order Insessores or Passeres, consisting of genera having a stout, conical beak. The best-known genera are the larks, tits, finches, sparrows, gold-finches, linnets, bullfinches, crossbills, starlings, crows and birds of paradise.

Conium (kō-nī'um), a genus of umbelliferous plants. See *Hemlock*.

Conjeveram (kon-je-ver-um'), a town of Hindustan, presidency of Madras, district of Chingleput. It stands in a valley, is irregularly built, and from 5 to 6 miles long. It possesses two famous pagodas dedicated to Vishnu and Siva, and the inhabitants are mostly Brahmans. The name 'Benares of the South' has been sometimes given to it Cottons are manufactured in the town,

in which there is a large Free Church of Scotland mission school. Pop. 46,164.

Conjugal Rights (kon'jŭ-gal), in law, the right which husband and wife have to each other's society, comfort and affection.

Conjunction (kon'junk'shun), in grammar a connective indeclinable particle serving to unite words, sentences, or clauses of a sentence, and indicating their relation to one another. They are classifiable into two main groups: (1) Coördinating conjunctions, joining independent propositions, and subdivisible into copulative, disjunctive, adversative and illative conjunctions. (2) Subordinating conjunctions, linking a dependent or modifying clause to the principal sentence.

Conjunction, in astronomy, the position of two of the heavenly bodies, such as two planets, or the sun and a planet, when they have the same longitude (are in the same direction from the earth). When it is simply said that a planet is *in conjunction*, conjunction with the sun is to be understood. *Superior* conjunction and *inferior* conjunction are terms used of the planets whose orbits are nearer to the sun than that of the earth, according as the sun is between us and them or they between us and the sun.

Conjunctiva (kon-junk-tī'va), the mucous membrane which lines the inner surface of the eyelids and is continued over the forepart of the globe of the eye.

Conkling (konk'ling), Roscoe, lawyer, orator and political leader, born at Albany, New York, 1829; died in Utica in 1888. He was in Congress 1859-63 and 1865-67, and United States Senator 1867-81, when he angrily resigned on account of disagreement with President Garfield on the question of political appointments to office.

Connaught (kon'nat), the smallest of the four provinces of Ireland, situated between Leinster and the Atlantic; area, 6862 square miles: Its west coast is much broken up by numerous bays and inlets, and is thickly studded with islands. The central parts are comparatively level and of limestone formation, while the surrounding and picturesque mountains are formed of standstone, clay-slate, granite and quartz. A large proportion of the province is bog, and, generally, it is the least fertile of all the provinces. It is divided into five counties—Galway, Mayo, Roscommon, Leitrim and Sligo. Pop. 646,932.

Connaught, Arthur William Patrick Albert, Duke of, an English statesman, the third son of Queen Victoria, born in 1850. He was trained in the Royal Military Academy, Woolwich, and received his commission in 1868. His promotion was rapid. In 1879 he married Princess Louise Margaret of Prussia. In 1905 he was made personal *aide-de-camp to* Edward VII, and in 1910 opened the first parliament of the Union of South Africa. In 1911 he succeeded Earl Grey as Governor-General of Canada. The democracy of his régime gave him wide popularity.

Conneaut (kon-e-at'), a town of Ashtabula Co., Ohio, on Lake Erie, 68 miles N. E. of Cleveland. It has a good harbor and is a big ore port. There are manufactures of iron, leather, tinplate, etc. Pop. (1920) 9343.

Connecticut (kon-net'i-kut), a river of New England, the west branch of which forms by treaty the boundary between the United States and Canada to lat. 45° N. It rises on the north border of New Hampshire; forms the boundary between Vermont and New Hampshire, passes through the west part of Massachusetts and the central part of Connecticut, and falls into Long Island Sound. It is navigable for vessels drawing from 8 to 10 feet for about 300 miles from its mouth, subsidiary canals, however, being required above Hartford: total length, 450 miles.

Connecticut, one of the thirteen original States of the American Union; bounded by New York, Massachusetts, Rhode Island and Long Island Sound; length, east to west, about 95 miles; greatest breadth, north to south, about 72 miles; area, 4990 sq. miles. It contains several distinct ranges of hills, but none of them have any great elevation. Its principal river is the Connecticut, which divides it into two nearly equal parts. The coast is indented with numerous bays and creeks, which furnish many harbors. Its mineral resources are not extensive, but include iron, tungsten and porcelain-clay. Lime is produced in large quantities, and there is abundance of building-stone. The soil is in general better suited for grazing than tillage, abounding in fine meadows. But where agriculture is practised there are ample crops of hay, tobacco, corn, rye, wheat, oats, barley, potatoes, etc.; and fruits, particularly apples, flourish. The manufactures consist chiefly of woolen, cotton and silk goods, metal goods, paper, clocks, hats and caps, leather goods, pottery-ware, glass and machinery, firearms, sewing machines, soap, candles, bricks, automobiles, etc. The principal exports consist of agricultural

CONNECTICUT
The Race
LONG ISLAND SOUND
MASSACHUSETTS
RHODE ISLAND
NEW YORK
HARTFORD
New Haven
Bridgeport
Stamford
Waterbury
Meriden
Middletown
New Britain
Norwich
New London
Danbury
Naugatuck
Ansonia
Derby
Scale of Miles

produce and manufactures. The foreign commerce is nearly all carried on through New York and Boston, but there is a considerable coasting trade, and a large amount of tonnage engaged in the cod-fisheries. Fish-culture has received special attention, many millions of shad ova and young salmon having been introduced into the rivers. The number of miles of railway in operation is over 1000. The chief educational institution is Yale College, one of the most celebrated in the States. Connecticut is divided into eight counties; the seat of government is Hartford. The State at first consisted of two colonies—Connecticut, with its seat of government at Hartford; and New Haven, with capital of same name. Connecticut was settled in 1633 by emigrants from Massachusetts, Hartford was settled by English in 1635, the Dutch having previously built a fort there. The colony of New Haven was settled by English in 1638, and the two colonies were united under the name of Connecticut, in 1662. Pop. (1900) 908,420; (1910) 1,114,756; (1920) 1,380,631.

Connellsville (kon'els-vil), a city of Fayette Co., Pennsylvania, 37 miles S. E. of Pittsburgh. Its production of coke is the largest in the United States; also has manufactures of iron, steel, glass and other products. Pop. (1920) 13,804.

Connemara (kon-nē-mä'ra), a district of Galway, Ireland, about 30 miles long, 15 to 20 broad. It is mountainous and boggy.

Connersville (kon'ers-vil), a city, county seat of Fayette Co., Indiana, on White Water River. It has manufactures of automobiles, blowers and gas exhausters, etc. Pop. 9901.

Conning Tower, the low, shot-proof pilot house of an armored vessel. In submarines the conning tower is a low tower on the deck which serves as a post of observation; it has a hinged top which may be lifted to permit men to enter or leave the boat.

Conoid (kō'noid), in geometry, a solid formed by the revolution of a conic section about its axis. Thus the solid resulting from a parabola is a parabolic conoid or paraboloid; if a hyperbola, a hyperbolic conoid or hyperboloid, etc.

Conon (kō'non), an Athenian who had the command of a fleet in 413 B.C. to prevent the Corinthians from relieving Syracuse then at war with Athens, and who, after various services, succeeded Alcibiades in 406. When the Athenian fleet was surprised and Athens captured by Lysander in 405, Conon escaped to Cyprus, and afterwards joined the Persians against the Spartans, being appointed to the command of a Persian fleet in 397. In 394, with Pharnabazus he defeated the Spartan admiral, Pisander of Cnidus, and in 393 returned to Athens to restore the walls and fortifications.

Conquest (kong'kwest), the act of subduing. In international law it is defined as the forcible acquisition of enemy territory or the territory so acquired. Immovable property taken from the enemy is called *conquest;* movable property on land is called *booty;* and capture on the high seas is called *prize. Pillage* is unauthorized plundering.

Conrad I (kon'rad), King of Germany (911-918); died December 23, 918. During his reign the country was invaded by the Danes, Slavs and Magyars, and he was constantly at war with his own subjects.

Conrad II, 'the Salian,' King of Germany and Emperor of the Romans, reigned from 1024 to 1039, and is regarded as the true founder of the Franconian or Salic line. On his election he proclaimed a *God's Truce* in order to attempt certain reforms in the kingdom; but his attention was too distracted between Italy and Germany for him to do more than repress some of the more marked evils of the feudal system.

Conrad III, King of Germany and emperor from 1138 to 1152, was the founder of the Suabian dynasty of Hohenstaufen. During the struggle with his rival Henry the Proud, the factions of Guelf and Ghibeline, named from the war-cries of the respective parties, came into existence. Conrad, persuaded by St. Bernard, took part in the second crusade, from 1147 to 1149. His marriage with a Greek princess led to his adoption of the double-headed eagle. He was succeeded by his nephew Frederick Barbarossa.

Conrad, JOSEPH, an English novelist, born in Poland in 1857 and naturalized in Britain. His parents were implicated in the Polish uprising of 1862. Conrad took to the sea and sailed all over the world, embodying his experience in his story, *Youth* (1902). His other works include *Almayer's Folly* (1895), *Tales of Unrest* (1898), *'Twixt Land and Sea* (1912) and *A Personal Record* (1913).

Consalvi (kon-säl'vē), ERCOLE, cardinal and prime minister of Pope Pius VII, born in 1757; died in 1824. He concluded the famous concordat with Napoleon in 1801.

Consanguinity (kon-sang-kwin'i-ti), the relation of persons descended from the same ancestor.

It is either lineal or collateral—lineal between father and son, grandfather and grandson, and all persons in the direct line of ancestry and descent, from one another; collateral between brothers, cousins, and other kinsmen descended from a common ancestor, but not from one another.

Conscience (kon'shens), that power or faculty, or combination of faculties, which decides on the rightness and wrongness of actions; otherwise called the *Moral Sense*. Whewell defines it as 'the reason, employed about questions of right and wrong, and accompanied with the sentiments of approbation and condemnation, which, by the nature of man, cling inextricably to his apprehension of right or wrong.' See *Ethics*.

Conscience (kōn-syăns), HENDRIK, a Flemish novelist, born at Antwerp in 1812; died in 1883. Having educated himself, he taught for a short time in a school, and then served in the army for six years. He was for a time tutor in Flemish to the royal princes, and from 1868 conservator of the Wierts Museum at Brussels. His novels, some of which have been translated into English, are partly based on the history of his country, partly pictures of everyday Flemish life. They include *The Lion of Flanders; Jakob van Artevelde; Batavia; Wooden Clara; Blind Rosa; The Poor Nobleman; The Young Doctor; Maternal Love*, etc. He also wrote a *History of Belgium*.

Consciousness (kon'shus-nes), a term used in various senses, most commonly perhaps to denote the mind's knowledge or cognizance of its own action.

Conscription (kon-skrip'shun), the enlisting of the inhabitants of a country capable of bearing arms, by a compulsory levy, at the pleasure of the government, being thus distinguished from *recruiting*, or voluntary enlistment. The word and the system were both introduced into France in 1798 by a law which declared that every Frenchman was a soldier, and bound to defend the country when in danger. Excepting in times of danger it provided that the army should be formed by voluntary enrolment or by *conscription*. The conscription included all Frenchmen from twenty years of age complete to twenty-five years complete. On the restoration of the Bourbons conscription was abolished. It was, however, reënacted, and continued through the Second Empire to form the mode of recruitment in France. An army bill, passed by the National Assembly in 1872, affirmed the universal liability to conscription, with certain exemptions. The Prussian conscription law of 1808 permitted no exemptions; it was extended to all Germany and became a potent factor in the Franco-Prussian war, 1870. The system was abolished in Germany by the peace treaty of 1919. Similarly Austria, which had enforced conscription, was compelled by the treaty of 1919 to abolish universal compulsory service. Under the Russian law of 1872 all men of twenty-one years were compelled to serve in the army six years. Italy and Switzerland and most of the other countries of Europe have adopted conscription. The outstanding exception was Great Britain, which, prior to the war of 1914-18, had fought all her battles with volunteer troops. In the stress of the Great War she was compelled to forego her volunteer policy, and on May 24, 1916, enacted a conscription law calling all men between the ages of 18 and 41 to the colors. This law was not applied to Ireland. Canada adopted conscription August 29, 1917, calling to the colors all men betwen the ages of 20 and 45. The age limit was lowered to 19 in May, 1918. Canada raised a volunteer army of 465,984, adding only 83,355 by the draft. Australia refused to adopt conscription.

In the United States conscription was resorted to on several occasions during the Civil war. Again in 1917, following the declaration of war with Germany, the United States passed the Selective Service Law on May 19, calling for the registration of all males in the United States between the ages of 21 and 30 years. Nearly 10,000,000 Americans registered on June 5. A second registration, one year later (June 5, 1918, and August 24, 1918), included those who had become 21 years old since the first registration. A third registration (Sept. 12, 1918) extended the age limits downward to 18 and upward to 45. The total number registered was 24,234,021; number inducted to Nov. 11, 1918, 2,810,296. In round numbers 4,000,000 men served in the Army of the United States during the European war (q. v.).

Consecration (kon-se-krā'shun), the dedication with certain rites or ceremonies of a person or thing to the service of God; especially (1) the ordination of a bishop or archbishop; (2) the dedication of a church to God's service, performed by a bishop; (3) the act of the priest in celebrating the eucharist.

Consequential Damages (kon-se-kwen'shal), in law, are such losses or damages as arise out of a man's act, for which,

according to a fundamental principle in law, he is answerable if he could have avoided them. The same law applies to railways and corporations generally, as determined in numerous cases.

Conservation of Energy. See *Energy.*

Conservation of Natural Resources. The great and heedless waste of the extensive natural treasures of the United States, especially the forests, has led within recent years to a concerted action for their conservation for the benefit of future generations. The first national movement in this direction was made by President Roosevelt in 1908, when he called a convention of State governors to consider what could be done for the preservation of our great natural wealth. The result of this movement was the formation of a National Conservation Commission, under the chairmanship of Gifford Pinchot, chief-forester, to take measures for this purpose. In December, 1908, Canada and Mexico were invited to take part in the movement, and in February, 1909, letters were sent to 45 nations, inviting their concurrence with the idea of calling a World Conservation Conference to consider in what way the vast natural resources of the world could best be conserved for man's benefit. Steps for the preservation and judicious handling of the American forests had previously been taken, by the withdrawal of public forest areas from exploitation and their conversion into national forests, the total area thus withdrawn to July 1, 1914, being 185,321,202 acres. A Bureau of Forestry was created in 1905, having control of these great wooded reserves. At present these forests yield an annual timber crop worth on the ground about $10,000,000, and furnish forage for cattle, horses, sheep and goats worth as much more to Western stockmen, while their yielding value is increasing instead of diminishing. In addition are State forests aggregating several millions of acres, yielding a profitable lumber supply and conserving the headwaters of many streams. These waters are being largely utilized in the West, by the building of irrigation dams, for the development into fertile farming lands of vast tracts of formerly arid and barren soils. Conservation has also been extended to streams yielding water-power, which have been widely withdrawn from private exploitation and retained as government property for the future benefit of the people at large. Similar steps have been taken in regard to the great area of coal lands in the western government domain, including the extensive coal beds discovered in Alaska. These have been withdrawn from private use, with the expectation that they can be handled in a way to yield a large income to the government and thus be made a source of national aggrandizement. In 1910 President Taft withdrew from settlement, under an act of Congress of that year, 43,568,895 acres of public lands, of which 35,073,164 were coal sites (not including the coal lands withdrawn in Alaska), the others petroleum, phosphate and water-power sites. While these may be reopened to settlement, it will be with the provision that the ownership of settlers will be confined to the surface, the mineral deposits underground being reserved for national use.

Conservatives (k o n-sėr'va-tivz), in British politics the party that substantially corresponds to what used to be the Tory party, taking the opposite side to the *Liberals.* The name came into use about the time of the passing of the Reform Act of 1832 and is often used as implying greater enlightenment or liberality than *Tory.*

Conservatory (k o n-sėr'va-to-ri), a name given on the European continent to a systematic school of musical instruction. Conservatories were originally benevolent establishments attached to hospitals, or other charitable or religious institutions. In Naples there were formerly three conservatories for boys; in Venice four for girls; the Neapolitan group being reduced in 1818 to a single establishment under the name Royal College of Music. In Milan a conservatory was established in 1808. In France the musical school established in connection with the Opéra received its final organization in 1795 under the name of *Conservatoire de musique.* Among its teachers have been Méhul, Cherubini, Grétry, Boieldieu, etc. The Conservatorium, founded at Leipzig in 1842 under the auspices of Mendelssohn, is perhaps the most influential in Germany, though of late years other schools have pressed closely upon it. Institutions of the same description exist in Warsaw, Prague, Munich, Berlin and Vienna, and the term has been adopted in the United States and the British dominions.

Conservatory, in gardening, a term generally applied by gardeners to plant-houses, in which the plants are raised in a bed or border without the use of pots, the building being frequently attached to a mansion. The principles of their construction are

in all respects the same as for the greenhouse, with the single difference that the plants are in the free soil, and grow from the floor instead of being in pots placed on shelves or stages. This distinction, however, is often disregarded, 'conservatory' being restricted to the private hothouse.

Conserve (kon'sėrv), preserved or candied fruit. The plural form is *preserves*. See *Preservation of Foods*.

Conshohocken (kon-shō-hok'en), a borough of Montgomery Co., Pennsylvania, on Schuylkill River, 13 miles N. W. of Philadelphia. It has steel mills, rubber works, woolen and cotton mills, foundries, stone quarries, glass works, etc. Pop. (1920) 8481.

Consideration (kon-sid-ėr-ā'shun), in law, the reason or substantial ground which induces a party to enter into a contract; the equivalent for something given, done, or suffered. It may be either expressed or implied, that is, where justice requires it and the law implies it.

Consignment (kon-sīn'ment), a mercantile term which means either the sending of goods to a factor or agent for sale, or the goods so sent. The term is chiefly used in relation to foreign trade. The receivers of consignments have usually to keep magazines and stores, for the use of which their consigners are charged. The profits of a consigning agency often compare favorably with the occasionally larger but much less safe profits of original ventures. The consigning trade is protected by special laws. In most countries a consigner can claim his goods and collect all outstanding debts for goods sold on his account by a consignee who has suspended payment.

Consistory (kon'sis-tor-i), the highest council of state in the papal government. The name is also applied to the court of every diocesan bishop, held in their cathedral churches for the trial of ecclesiastical causes arising within the diocese. In the English Church the consistory is held by the bishop's chancellor or commissary and by archdeacons and their officials either in the cathedral church or other convenient place in the diocese.

Consolato del Mare (It., lit. 'the consulate of the sea'), an ancient code of maritime law, supposed to be a compilation of the law and trading customs of various Italian cities, as Venice, Genoa, Pisa and Amalfi, together with those of the cities with which they traded, as Barcelona, Marseilles, etc. It has formed the basis of most of the subsequent compilations of maritime laws.

Console (kon'sōl), in architecture, a projecting ornament or bracket having for its contour generally a curve of contrary flexure. It is employed to support a cornice, bust, vase, or the like, but is frequently used merely as an ornament.

Cornice supported by Consoles, A A.

Consols (kon'solz), or CONSOLIDATED ANNUITIES, a public stock forming the greater portion of the national debt of Great Britain. It was formed in 1751 by an act consolidating several separate stocks bearing interest at 3 per cent. into one general stock. At the period when the consolidation took place the principal of the funds united amounted to £9,137,821; but through the addition of other loans it has increased so much that now, after considerable reductions, it still amounts to more than half of the national debt. The interest of about £5,000,000 is payable in Dublin, that of the remainder in London.

Consonance (kon'sō-nans), in music, an agreeable accord of sounds, such as the third, fifth, and octave. See *Concord*.

Consonant (kon'sō-nant; L. *con*, with, *sonare*, to sound), a letter so named as being sounded only in connection with a vowel, though some consonants have hardly any sound even when united with a vowel, serving merely to determine the manner of beginning or ending the vowel sounds; as in *ap*, *pa*, *at ta*. In uttering a consonant there is greater or less contact of some parts of the organs of speech; in uttering a vowel there is a want of such contact, the vocal passage being open, though variously modified. They are classed as *liquids*, *mutes*, *sibilants*, *labials*, *dentals*, *palatals*, *gutturals*, etc.

Conspiracy (kon-spir'a-si), in law, an offense ranked as a misdemeanor, and punishable by imprisonment and hard labor. It is constituted

by a combination between several persons to carry into effect any purpose injurious either to individuals, particular classes, or the community at large. When the conspiracy leads to any overt act of an unlawful kind, the offense becomes felony.

Constable (kun'sta-bl; Fr. *connétable;* Old Fr. *conestable;* Lat. *comes stabuli*, 'count of the stable'), an officer of high rank in several of the mediæval monarchies. Among the Franks, after the *major domus*, or mayor of the palace, had become king, the *comes stabuli* became the first dignitary of the crown, commander-in-chief of the armies, and highest judge in military affairs The *connétable*, however, acquired so much power that Louis XIII in 1627 abolished the office entirely. Napoleon reëstablished it, but it vanished with his downfall. In England the office of *lord high constable* was created by William the Conqueror, and became hereditary in two different families, as annexed to the earldom of Hereford. After the attainder of Stafford, however, lord high constables were appointed only to officiate on special occasions. The office of lord high constable of Scotland, expressly reserved in the treaty of union, is hereditary in the noble family of Errol.

In the common modern acceptation of the term constables are police officers in towns, counties, etc., having as their duties the repression of felonies, the keeping of the peace, the execution of legal warrants, etc. In case of special disturbance a certain number of private citizens may be sworn in as *special constables*. In the United States a constable is usually the acting bailiff of a justice of the peace, serving writs, executing judgments, making distraints, etc.

Constable, ARCHIBALD, a Scottish publisher, born in 1774; died in 1827. He was the original publisher of the *Edinburgh Review* and of Scott's novels, and his failure in 1826 involved Scott heavily, the life of the famous novelist being given through a strenuous effort to meet the claims of creditors.

Constable, HENRY, a poet of the Elizabethan era, born in 1556, educated at Cambridge. His chief work was his book of sonnets, *Diana*, published in 1592, when few sonnets in the Italian form had been written. He was probably the author also of the *Forest of Fancy* (1579), attributed to Chettle. Suspected of treason against Elizabeth, he was compelled to leave the country in 1595, and on his return in 1601 was confined in the Tower for three years. Date of his death is unknown.

Constable, JOHN, an English landscape painter, born in 1776. He was employed in the business of his father, a wealthy miller, for some years, but entered as a student of the Royal Academy in 1799. It was not till 1814, twelve years after he had begun to exhibit pictures, that he succeeded in getting any of them sold. In 1819 his *View on the River Stour* procured him admission as an associate of the Academy. From this period his reputation widely extended itself, both over Britain and the continent, and for some of his works exhibited at the Louvre he received a gold medal from the King of France. He died in 1837. His careful studies of landscape in respect of tone were of great influence in art, especially in France, which derived its best landscape work from him.

Constance (kon'stans), a town of Germany, in Baden, on the south bank of the Lake of Constance, at the outflow of the Rhine into the Lower Lake or Untersee, its chief edifices being a magnificent cathedral, several churches, the Kaufhaus (merchant-house), an ancient palace, a grand-ducal residence, several convents, a theater, etc. The town has various branches of industry and a considerable trade. It was once a flourishing imperial city much larger than at present. Pop. 24,818.

Constance, COUNCIL OF, a special council of the Church of Rome, held between 1414 and 1418. The German emperor, the pope, 26 princes, 140 counts, more than 20 cardinals, 7 patriarchs, 20 archbishops, 91 bishops, 600 other clerical dignitaries and doctors, and about 4000 priests, were present at this assembly, which condemned to death Huss and Jerome of Prague, deposed the rival popes John XXIII, Gregory XII. and Benedict XIII, and elected Martin V to the papal chair.

Constance, LAKE OF (anc. *Lacus Brigantinus;* Ger. *Bodensee*), a lake of Central Europe in which Switzerland, Baden, Würtemberg, Bavaria, and Austria meet; forming a reservoir in the course of the Rhine; length N. W. to S. E. 42 miles, greatest breadth about 8 miles; area 207 sq. miles; greatest depth (between Friedrichshafen and Uttwil) 838 ft.; 1283 ft. above sea-level. At its N. W. extremity the lake divides into two branches or arms, each about 14 miles in length; the north, called the Uberlingersee, after the town of Uberlingen, on its north bank; the south the Zellersee or Untersee, in which is the fertile island of Reichenau, belonging to Baden, about 3 miles long and 1½ broad. The lake, which is of s

dark-green hue, is subject to sudden risings, the causes of which are unknown. It freezes in severe winters only. The traffic on it is considerable, there being numerous steamers. The shores are fertile, but not remarkably picturesque.

Constant (kōn-stäṇ), BENJAMIN, portrait painter, was born at Paris in 1845. He studied in the École des Beaux Arts and under Cabanel. He exhibited with growing distinction, at successive salons, from that of 1800 with his *Hamlet*, his *Samson* in 1872, his *Scenes from Algiers* in 1873-74, his great historical painting of *Mohammed II in 1453* in the exposition of 1878, and in 1885 a large Oriental subject, as melodramatic as possible, with splendid rendering of the human figure and strong effects of color. His noble picture of *Justinian* is in the Metropolitan Art Museum, New York. He was decorated with the cross of the Legion of Honor in 1872, and was a member of the French Academy of Fine Arts. He died in 1902.

Constant de Rebecque (kōn-stäṇ-d-rė-bek), HENRI BENJAMIN, born at Lausanne in 1767; a prominent French liberal politician. During the revolution he distinguished himself by his works upon politics and on revolutionary subjects, and was elected to the office of tribune; but his speeches and writings rendered him odious to the First Consul, and he was dismissed in 1802. He died in 1830.

Constantia (kon-stan'ti-a), a small district in Cape Colony a few miles from Cape Town, celebrated for its wine, made from vines brought originally from Persia and the Rhine, esteemed the best liqueur wine after Tokay, and owing its special properties largely to the soil.

Constantina (kon-stän-tē'nä), a town of Spain, 40 miles N. N. E. of Seville. Argentiferous lead mines are in the vicinity. Pop. 9687.

Constantine (kon-stän-tēn'), a town in Algeria, capital of a province of same name, on a rocky peninsula, 1968 ft. above the sea, and accessible only on one side. It is surrounded by walls, and the only edifice deserving notice is the palace of the bey, now the residence of the French governor. Both within the town and in the vicinity Roman remains abound, the town having been built by the emperor whose name it bears, on the site of Cirta, the capital of the Numidian kings. The manufactures consist chiefly of woolen and linen goods; the trade is in corn, linen, and wax. Pop. of town (1906) 46,806.

Constantine (kon'stan-tēn), CAIUS FLAVIUS VALERIUS AURELIUS CLAUDIUS, Roman emperor, surnamed the *Great*, son of the Emperor Constantius Chlorus, was born A.D. 274. When Constantine's father was associated in the government by Diocletian, the son was retained at court as a hostage, but after Diocletian and Maximian had laid down the reins of government, Constantine fled to Britain, to his father, to escape from Galerius. After the death of his father he was chosen emperor by the soldiery, in the year 306, and took possession of the countries which had been subject to his father, namely, Gaul, Spain, and Britain. He more than once defeated the Franks who had obtained a

Constantine.

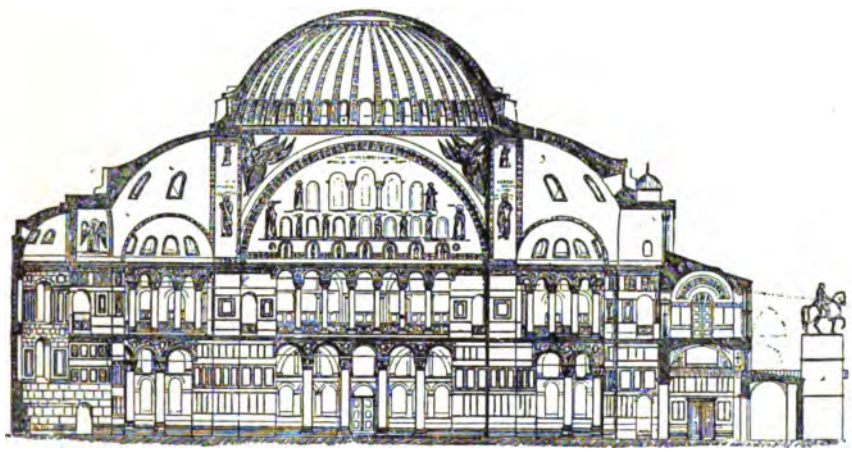
footing in Gaul and drove them across the Rhine; and then directed his arms against Maxentius, who had joined Maximian against him. In the campaign in Italy he saw, it is said, the vision of a flaming cross in the heavens, beneath the sun, bearing the inscription, '*In hoc signo vinces*.' Under the standard of the cross, therefore, he vanquished the army of Maxentius under the walls of Rome, and entered the city in triumph. In 313, together with his son-in-law, the eastern emperor, Licinius, he published the memorable edict of toleration in favor of the Christians, and subsequently declared Christianity the religion of the state. Licinius, becoming jealous of his fame, twice took up arms against him, but was on each occasion defeated, and finally put to death. Thus in 323 Constantine became the sole head of the Roman Empire. His internal administration was marked by a wise spirit of reform, and by many humane concessions with regard to

slaves, accused persons, widows, etc. In 329 he laid the foundation of a new capital of the empire, at Byzantium, called after him Constantinople. In 332 he fought against the Goths, relieved the empire of a disgraceful tribute, and secured his frontier upon the Danube. In 337 he was taken ill, was baptized, and died, leaving his empire between his three sons, Constantine, Constantius and Constans. He is sometimes numbered among the saints, and his festival observed May 20 or 21.

Constantine, PAULOVITCH, Grand-prince of Russia, second son of Paul I, born in 1779. He distinguished himself in 1799 under Suwarroff, and at Austerlitz in 1805; and in 1812, 1813 and 1814 attended his brother, the Emperor Alexander, in all his campaigns. Later he superintended affairs in Poland. On the decease of his brother in 1825 he was proclaimed emperor, but renounced his claim. He died in 1831, execrated by the Poles as one of their most barbarous oppressors.

Constantine I, King of Greece from 1913 to 1917, was born at Athens August 2, 1868. At the outbreak of the European war his sympathies were with the German-Austrian combination, the Kaiser Wilhelm being his brother-in-law. He professed neutrality, but Great Britain and her Allies forced his abdication and placed his second son, Alexander, on the throne of the Hellenes on June 13, 1917. Constantine was charged with 'having violated the Constitution of which France, England and Russia are the trustees.'

Constantinople (k o n-stan-ti-nō'pl; 'city of Constantine,' called by the Turks *Stamboul*, from the Greek *eis tēn polin*, into the city), a celebrated city of Turkey in Europe, capital of the Turkish Empire, situated on a promontory jutting into the Sea of Marmora, having the Golden Horn, an inlet of the latter, on the north and the Bosphorus on the east. The city proper is thus surrounded by water on all sides excepting the west, where is an ancient and lofty double wall of 4 miles in length, stretching across the promontory. On the opposite side of the Golden Horn are Galata, Pera, and other suburbs, while on the Asiatic side of the Bosphorus entrance is Skutari. Occupying the extreme point of the promontory on which the city stands is the Seraglio or palace of the sultan, which, with its buildings, pavilions, gardens, and groves, includes a large space. At the principal entrance is a large and lofty gate, called Bab Humayum, 'the high door' or 'sublime porte,' from which has been derived the well-known diplomatic phrase. Of the 300 mosques, the most remarkable are the royal mosques, of which there are about fifteen, esteemed the finest in the world. First among these is the mosque of St. Sophia, the most ancient existing Christian church, converted in 1453 into a mosque on the capture of the city by the Turks. Another magnificent mosque is that of Soliman; after which are those of the Sultana Valide, built by the mother of Mohammed IV, and of Sultan Achmet, the most conspicuous object in the city



Section of Santa Sophia, Constantinople.

when viewed from the Sea of Marmora. The streets are mostly extremely narrow, dark, dirty, and ill paved, and exceedingly crooked and tortuous, but there has been a certain opening up and improvement within recent years owing to the construction of tramways and the railway to Adrianople, which runs along the shore of the Sea of Marmora and past the Seraglio to the entrance of the Golden Horn. The numerous covered and uncovered bazaars are severally allotted to particular trades and merchandise. Constantinople has but one remarkable square, called the

At-Meidan, occupying the site of the ancient *Hippodrome*. There are about 130 public baths in the city, mostly of marble, of plain exterior, but handsome and commodious within. The numerous cemeteries, mostly outside the western wall, have become vast forests, extending for miles round the city and its suburbs. The few manufactures are chiefly confined to articles in morocco leather, saddlery, tobacco-pipes, fez caps, arms, perfumes, gold and silver embroideries, etc. The foreign commerce is considerable. The harbor, the Golden Horn, which more resembles a large river than a harbor, is deep, well sheltered and capable of containing 1200 large ships, which may load and unload alongside the quays. It is about 6 miles long, and a little more than half a mile broad at the widest part. Among the imports are grain, timber, cotton stuffs, and other manufactured goods. The exports consist of silk, carpets, hides, wool, goats' hair, valonia, etc.—The suburb GALATA is the principal seat of foreign commerce. Here are situated the arsenals, the dock-yard, the artillery barracks, etc., extending along the Bosporus for nearly 1½ miles. It is an ancient place.—PERA occupies the more elevated portion of the promontory of which Galata forms the maritime part. Both it and Galata have now much of the appearance of modern European towns.—TOPHANEH is situate a little further up the Bosporus than Galata, of which it forms a continuation. It has a government foundry and arsenal for cannon.—Constantinople occupies the site of the ancient Byzantium, and was named after Constantine the Great, who rebuilt it about A.D. 330. It was taken in 1204 by the Crusaders, who retained it till 1261; and by the Turks under Mohammed II. May 29, 1453—an event which completed the extinction of the Byzantine Empire. See *Byzantine Empire* and *Byzantium*. Pop. (1914), 1,300,000.

Constantinople, GENERAL COUNCILS OF. These include the second, fifth, sixth, the Trullan, and the eighth. The second was convoked by Theodosius the Great, in 381, to put down the enemies of the Nicene Creed, who had already been restrained by his decrees. The fifth general council was held by the Emperor Justinian in 553, to decide the dispute of the Three Chapters, or three doctrines of the Bishops Theodore of Mopsuestia, Theodoret, and Ibas of Edessa, who were suspected of Nestorianism, and declared heretics by the council. The sixth council, held 680-681, condemned the doctrines of the Monothelites, and declared their leaders heretics. As these two councils made no new ecclesiastical laws, the Emperor Justinian II. in 692, again summoned a general council, which, because it was held in the Trullan Palace, was called the *Trullan Council*. It instituted rigid laws for the clergy, among them those fixing the rank of the patriarchs and the permission of marriage to priests, which were so offensive to the Latin Church that she rejected all the decrees of this council; but in the Greek Church they are still valid. The

eighth general council (869-870) declared against the Iconoclasts, deposed Photius, and confirmed St. Ignatius in the see of Constantinople. This council is not recognized by the Greek Church.

Constellations (k o n-s tel-lā'shuns) are the groups into which astronomers have divided the fixed stars, and which have received names for convenience of description and reference. It is plain that the union of several stars into a constellation, to which the name of some animal, person, or inanimate object is given, must be entirely arbitrary, since the several points (the stars) may be united in a hundred different ways, just as imagination directs. The grouping adopted by the Egyptians was accordingly modified by the Greeks, though they retained the Ram, the Bull, the Dog, etc.; and the Greek constellations were again modified by the Romans and again by the Arabians. At various times, also, Christianity has endeavored to supplant the pagan system, the Venerable Bede having given the names of the twelve apostles to the signs of the zodiac, and Judas Schillerius having, in 1627, applied Scripture names to all the constellations. Weigelius, a professor of Jena, even grouped the stars upon a heraldic basis, introducing the arms of all the princes of Europe among the constellations. The old constellations have, however, been for the most part retained. Ptolemy enumerated forty-eight constellations, which are still called the *Ptolemæan*. They are the following:—1. The twelve signs of the zodiac (see *Zodiac*). 2. Twenty-one constellations found in the northern hemisphere—the Great Bear (*Ursa Major*), the Little Bear (*Ursa Minor*), Perseus, the Dragon, Cepheus, Cassiopeia, Andromeda, Pegasus, Equulus (Horse's Head), the Triangle, the Wagoner (*Auriga*), Boötes, the Northern Crown (*Corona Borealis*), Ophiuchus, the Serpent (*Serpentarius*), Hercules, the Arrow (*Sagitta*), the Lyre, the Swan (*Cygnus*), the Dolphin, the Eagle (*Aquila*). 3. Fifteen constellations in the southern hemisphere—Orion, the Whale (*Cetus*), Eridanus, the Hare (*Lepus*), the Great Dog (*Canis Major*), the Little Dog (*Canis Minor*), Hydra, the Cup (*Crater*), the Crow (*Corvus*), the Centaur, the Wolf (*Lupus*), the Altar (*Ara*), the Southern Fish (*Piscis Austrālis*), the Argo, the Southern Crown (*Corōna Austrālis*). Others were subsequently added, this being especially rendered necessary by the increased navigation of the southern hemisphere, and now the different groups of stars have come to be associated with all sorts of animals and objects, including the Camelopard, the Fly, the Air-pump, the Compasses, etc. The different stars of a constellation are marked by Greek letters, α denoting those of the first magnitude, β those of the second, and so on. Stars of the sixth magnitude are the smallest visible to the naked eye. Several stars have also particular names.

Constipation (kon-sti-pā'shun), the undue retention of the fæces. Its immediate effects are disordered appetite, a dry, coated or clammy tongue, thirst, or a disagreeable taste in the mouth, dullness, giddiness, or pain in the head, torpor, irritability and despondency. Its less immediate effects are cutaneous affections, dyspepsia, colic, hysteria, hæmorrhoids, etc. In most cases it is produced by indigestible food, astringent and stimulating drinks, sedentary habits, excessive indulgence in sleep, etc. The immediate use of purgatives, followed by strict attention to regimen, is in many cases all that is necessary.

Constituent Assembly (kon-stit'ū-ent), a name given to the first convention of the delegates of the French nation (1789-91) to distinguish it from the legislative assembly of 1791. It drew up and obtained the acceptance of the first of the famous revolutionary constitutions. The Constituent Assembly of 1848 had a similar aim.

Constitution (kon-sti-tū'shun), the fundamental law of a state, whether it be a written instrument of a certain date, as that of the United States of America, or an aggregate of laws and usuages which have been formed in the course of ages, like the English constitution. The ideal constitution is that established by a free sovereign people for their own regulation, though the expediency of other forms at various stages of national development cannot but be recognized. The chief of these are:—1. Constitutions granted by the plenary power of absolute monarchs, or *constitutions octroyées*, such as Louis XVIII's *Charte*. 2. Those formed by contract between a ruler and his people, the contract being mutually binding—a class under which, in a great degree, the British constitution must be placed. 3. Those formed by a compact between different sovereign powers, such as the constitutions of the German Empire, of the United Provinces of Holland, and of the Swiss Confederation. 4. Those made by the people of a country or state for their own government, as in the United States.

In regard to political principles, constitutions are:—1. Democratic, when the

fundamental law guarantees to every citizen equal rights, protection, and participation, direct or indirect, in the government, such as the constitutions of the United States and of some cantons of Switzerland. 2. Aristocratic, when the constitution recognizes privileged classes as the nobility and clergy, and entrusts the government entirely to them, or allows them a very disproportionate share in it. Such a constitution was that of Venice, and such at one time those of some Swiss cantons, for instance, Bern. 3. Of a mixed character. To this latter division belong some monarchical constitutions, which recognize the existence of a king whose power is modified by other brancnes of government of a more or less popular cast. The British constitution belongs to this division. For the text of the Constitution of the United States, see *United States*.

Constitution, The, an American frigate of 44 guns, launched Sept. 20, 1797, which became renowned in the suppression of Barbary pirates and for her many victories in the war of 1812. She was the subject of O. W. Holmes's poem *Old Ironsides*, by the influence of which she has been retained in the navy and is now at the Boston Navy Yard. She captured the British frigate Guerriere off Cape Race, August 19, 1812, in an action which lasted 30 minutes.

Consubstantial (kon-sub-stan'shal), an equivalent for the Greek term *homoousios*, the true signification of which disturbed the religious world early in the fourth century. The Athanasians, or Trinitarians at the Council of Nice in 325, gave it the meaning indicated in the Nicene Creed, '*Of one substance* with the Father' (applied to Christ).

Consubstantiation (kon-sub-stan-she-ā'shun; the doctrine that the body and blood of Christ coexist in and with the elements of the Eucharist, although the latter retain their nature as bread and wine; opposed to the Roman Catholic doctrine of transubstantiation. The term consubstantiation was employed in the doctrinal controversies of the Reformation by non-Lutheran writers to designate the Lutheran view of the Saviour's presence in the Holy Supper. The Lutheran Church, however, has never used or accepted this term to express her view, but has always and repeatedly rejected it and the meaning it conveys in her official declarations.

Consul (kon'sul), a name originally given to the two highest magistrates in the republic of Rome. After King Tarquinius Superbus had been expelled by the joint efforts of the patricians and plebeians (509 B.C.), two consuls (*consules*) were placed at the head of the senate, the body in whose hands was the administration of the republic. These officers were annually elected, at first only from the patricians; at a later period (366 B.C.) also from the plebeians. In order to be eligible to the consulship, the candidate was to be forty-five years of age, and must have passed through the inferior offices of quæstor, ædile, and prætor, and he was required by law to be in Rome at the time of the election. All these laws, however, were disregarded at various junctures in Roman history. The insignia of the consuls were a staff of ivory with an eagle at its head, a toga bordered with purple (*toga prætexta*), which under the emperors was embroidered; an ornamental chair (*sella curūlis*), and twelve *lictors*, who, with *fasces* and axes, preceded them. In the beginning of the republic the authority of the consuls was almost as great as that of the preceding kings. They could declare war, conclude peace, make alliances, and even order a citizen to be put to death; but their powers were gradually curtailed, especially by the establishment of the tribunes of the people, early in the fifth century. But they still stood at the head of the whole republic; all officers were under them, the tribunes of the people only excepted; they convoked the senate, proposed what they thought fit, and executed the laws. In times of emergency they received unlimited power, and could even sentence to death without trial, levy troops, and make war without the resolve of the people first obtained. Under the emperors the consular dignity sunk to a shadow, and became merely honorary. The last consul at Rome was Theodorus Paulinus (A.D. 536).

In France the name of *consul* was temporarily adopted for the chief magistrates after the revolution. The directorial government (third constitution) having been abolished by the revolution of the 18th Brumaire, of the year VIII (Nov. 9, 1799), a provisional consular government, consisting of Bonaparte, Siéyès, and Roger Ducos, established the fourth constitution, proclaimed Dec. 15, by which France was declared a republic under a government of *consuls*. Three elective consuls (Bonaparte, Cambacérès, Lebrun) had almost uncontrolled executive authority, while the legislative power was in the hands of the tribunate and the legislative assembly; a conservative senate was also elected. But as early as Aug. 2, 1802, Bonaparte was proclaimed First Consul for life and thus the constitution of

France became again practically monarchical. On April 10, 1804, he was proclaimed emperor, and even the nominal consulate ended.

At present *consuls* are officials appointed by the government of one country to attend to its commercial interests in seaports or other towns of another country. The duties of a consul, generally speaking, are to promote the trade of the country he represents; to give advice and assistance when called upon to his fellow-subjects; to uphold their lawful interests and privileges if any attempt be made to injure them; to transmit reports of trade to his own government, to authenticate certain documents, etc. They are generally of three ranks: *consuls-general*, *consuls*, and *vice-consuls*.

The position of the United States consuls is minutely described in the Regulations, Washington, 1896. Under various treaties and conventions they enjoy large privileges and jurisdiction. By the treaty of 1816 with Sweden the United States government agreed that the consuls of the two states respectively should be sole judges in disputes between captains and crews of vessels. (Up to 1906 there were eighteen treaties containing this clause.) By convention with France in 1853, they likewise agreed that the consuls of both countries should be permitted to hold real estate, and to have the "police interne des navires à commerce." In Borneo, China, Korea, Morocco, Persia, Siam, Tripoli and Turkey an extensive jurisdiction, civil and criminal, is exercised by treaty stipulation in cases where United States subjects are interested. Exemption from liability to appear as a witness is often stipulated. To the consuls of other nations the United States government has always accorded the privileges of arresting deserters, and of being themselves amenable only to the federal and not to the state courts. They also recognize foreign consuls as representative suitors for absent foreigners. The United States commercial agents are appointed by the president, and are distinct from the consular agents, who are simply deputy consuls in districts where there is no principal consul. By a law of April, 1906, the U. S. consular service was reorganized and graded, the office of consul-general being divided into seven classes, and that of consul into nine classes.

Consuls are appointed by the president with the concurrence of the Senate. No specified term of service is fixed; usually all important consular officers are changed with changes of the administration. The result of this system has long been recognized to be unsatisfactory. A large measure of special knowledge is required for efficient consular service and such knowledge can be gained only through long service. Another defect from which the American consular system suffers is inadequacy of salaries. There are only a few posts carrying a salary of over $3500. In some cases fees for verifying invoices, etc., add very materially to the income of the consul; but in very few cases does the aggregate income of the consul compare with that of officers of like grade of foreign nations.

Consular reports on commercial matters are published by the bureau of statistics. These appear daily, and are later collected in monthly issues. At various times inquiries concerning matters of trade and industry are sent to the various consuls, and their reports are published by the same bureau.

Consumers' League, an organization which aims at bettering the conditions of workers and educating consumers to a knowledge of their responsibility toward the workers. It was begun in England in 1890 and spread the same year to the United States of America. The Working Women's Society of New York was making an investigation into the conditions of the employment of women in the city stores and called together a meeting to ask consumers to aid them in their movement. The result was the formation of the Consumers' League of New York (January, 1891), and of other great cities. The league began to inquire into the conditions of service which obtained in the retail stores, especially as regards wages, hours of labor, physical conditions, holidays and general treatment. After investigation it published a 'white list' of stores which satisfied their demands and through which members were encouraged to purchase goods. The league soon undertook to also inquire into factory conditions and laid down certain conditions to be satisfied before members would purchase goods coming from factories. A label which might be used by factory owners who came up to their standard of employment was devised. The league propagates its views by lectures and literature.

Consumption (kon-sum'shun), or PHTHISIS (thē'sis; Gr. *phthiō*, to consume), now usually known as *tuberculosis* (which see).

Consumption, in political economy, all use or expenditure of the products of industry or of things having an exchangeable value. It is usually characterized as productive or

unproductive, according as it does or does not conduce to the efficiency of a producer and to further production. Thus wealth in the form of machinery is consumed productively by wear and tear in the processes of production; and, similarly, wealth expended in improving land is productively consumed; but the wealth expended in the maintenance of an operatic artiste is, from the ordinary point of view, unproductively consumed. The classification, however, is not of a very definite kind, the distinction lying, for the most part, in the degree of directness and obviousness with which the act of consumption is related to production. Hence in the case of the operatic artiste it is sometimes urged that the recreative benefit conferred upon the community tends indirectly to increase efficiency in production, and that from this point of view the artiste consumes productively. So the expenditure of wealth in war, or in preparations for war, usually classed as unproductive, may be really productive consumption, as tending to the assurance of the producer in the stability of the commercial conditions. The perfect characterization of an act of consumption as productive or unproductive involves the consideration of elements of a frequently incommensurable kind, and the rough practical economic test has to be employed with some amount of reservation. Consumption is the end of all production; and as the demand of the consumer determines the employment of the various coefficients of production, land, labor and capital, it is urged by many later economists that the scientific treatment of economics should proceed from consumption to production, instead of from production to consumption in accordance with the method of the older economists. Too much stress may be laid upon this method, but the consideration of economic problems from the standpoint of the consumer is of advantage, as giving the social need, rather than the producer's profit, the prior claim upon the attention.

Contact Action. See *Catalysis.*

Contagion (kon-tā'jun), the communication of disease by contact direct or indirect. A distinction has sometimes been made between *contagion*, as the communication of disease strictly by contact, and *infection*, as communication of disease by the miasmata, exhalations or germs which one body gives out and the other receives. There is little doubt that excessively minute disease germs proceed from the breath, the perspiration or other excretions of a diseased person, and are capable of propagating the disease in another person; but much remains to be learned concerning the action of these. *Antiseptics*, or *disinfectants*, are used to destroy the poisonous particles, such as formaldehyde, carbolic acid, sulphur, permanganate of potash, chlorine gas, etc.

Contagious Diseases (Animals) Act, an act of the British Parliament passed in consequence of the ravages of the disease known as *Rinderpest* or cattle-plague, which broke out in 1865. Commissioners were appointed to investigate the subject, and in 1869 an act (subsequently amended by acts in 1878, 1884 and 1886) was passed enforcing regulations for preventing the introduction and spread of contagious diseases.

In the United States similar acts were made to stamp out pleuro-pneumonia, or lung plague, which caused much loss among neat-cattle. Kentucky, Indiana, Illinois and Missouri suffered largely from this disease, but it has been completely stamped out by the Bureau of Animal Industry. The symptoms of lung plague are fever, dry muzzle, accelerated pulse and respiration, depression, cough and indications of pleurisy and pneumonia. In about 50 per cent. of the cases death occurs in from one to two weeks from its attack; of the remainder about one-half become chronic and recover. No therapeusis that has been tried has been found of any value, so governments have made regulations to quarantine infected and suspected animals, and for the slaughter of those regarded as dangerous to healthy animals. The United States freed itself from pleuro-pneumonia by enforcing these measures. It is estimated that the loss caused by this disease reached several million dollars in this country, while in Britain the annual loss for some years amounted to over $10,000,000. It does not affect human beings. See *Rinderpest.*

Contango (kon-tang'gō), in stock-jobbing, a sum of money paid to a seller for accommodating a buyer, by carrying the engagement to pay the price of shares bought over to the next account day. In reality, contango is interest paid for the loan of money for the interval between account days. The price at which the bargain is entered is called the making-up price.

Contarini (kon-tā-rē'nē), a noble family of Venice which furnished seven doges to the State, besides several men of note.

Contempt (k o n - t e m t'), an offense against the dignity, order, or authority of a court or legislative assembly. Contempts committed out of court may be punished by fine or imprisonment, contempts done before court are usually punished in a summary way by commitment or fine. The power of vindicating t h e i r authority against contempt is incident to all superior courts.

Continent (kon'ti-nent), a connected tract of land of great extent, forming a sort of whole by itself, as Europe, Asia, Africa, North and South America; or we may speak of the Eastern and Western continents, Europe, Asia and Africa being regarded as one, and North and South America another. Australia, from its size, is often regarded as a continent, while Europe and Asia, regarded as a single body of land, are frequently spoken of as a continent under the name of Eurasia.

Continental System (k o n-ti-nen'-tăl), a plan devised by Napoleon to exclude Britain from intercourse with the continent of Europe. It began with the decree of Berlin of November 21, 1806, by which the British Islands were declared to be in a state of blockade; all commerce, intercourse and correspondence were prohibited; every Briton found in France, or a country occupied by French troops, was declared a prisoner of war; all property belonging to Britons, fair prize, and all trade in goods from Britain or British colonies entirely prohibited. Britain replied by orders in council prohibiting trade with French ports, and declaring all harbors of France and her allies subjected to the same restrictions as if they were closely blockaded. Further decrees on the part of France, of a still more stringent kind, declared all vessels of whatever flag, which had been searched by a British vessel or paid duty to Britain, denationalized, and directing the burning of all British goods, etc. These decrees caused great annoyance, and gave rise to much smuggling, till annulled at the fall of Napoleon, 1814.

Contingent (kon-tin'jent), the name often given to the quota of troops which is to be furnished by each member of a number of states composing a confederation.

Continuity (kon-ti-nū'i-ti), LAW OF, an important principle in the investigation of the laws of motion and change in general. It may be enunciated thus: nothing passes from one state to another without passing through all the intermediate states.

Contorniati (k o n - t o r-ni-ā'ti; It.), ancient medals or medallions in bronze, having a curved furrow (*contorno*) on each side, supposed to have been struck in the days of Constantine the Great and his successors, and to have formed tickets of admission to the public games of the circus of Rome and of Constantinople.

Contour (kon'tör), an outline. In geodesy *contours*, or *contour lines*, are lines or levels carried along the surface of a country or district at a uniform height above the sea-level, and then laid down on a map or plan, so that an approximately true outline of its contour is presented, the degree of accuracy depending on the number of lines or levels taken between the sea-level and the highest point in the region.

Contraband (kon'tra-band), in commerce, all goods and wares exported from or imported into any country, against the laws of said country. There are, also, a number of articles termed *contraband of war* which neutrals may be prevented, by one belligerent, from carrying to another. These formerly were confined to arms and munitions, but the contraband list has been so lengthened during recent wars as to include practically everything that might be of benefit to a belligerent.

Contrabasso (k o n - t r a-bas'so), the Italian name, now usually employed by musicians of all nationalities to designate the largest instrument of the violin kind (called sometimes the *double bass*), with three strings usually tuned in fourths. Its compass is from the lower A of the bass clef to tenor F. In Germany a fourth string is used, which gives it a range of three notes lower.

Contract (k o n't r a k t), in law, an agreement or covenant between two or more persons, in which each party binds himself to do or forbear some act, and each acquires a right to what the other promises. Contracts may be in express terms or implied from the acts of the parties; they may be verbal or written, and at common law both forms are binding; but by statute law a promise must be in writing. To be valid, a contract must be entered into by parties legally competent; that is, of sound mind and of full age. The act contracted for must not be contrary to law or public policy. Thus, an agreement to do injury to another or a contract not to marry at all (except in the case of a widow) is void. The contract must be founded on a consideration either of money or some act whereby an undoubted advan-

tage accrues to the party sued. Lastly, the contract is voidable if obtained by fraud, mistake, or compulsion.

Contract, ORIGINAL or SOCIAL, in politics, that which is supposed to exist from the beginning between the sovereign power and the subject. Such a contract is evidently a mere supposition, having no historical foundation in any annals which have been preserved.

Contractility (kon-trak-til'i-ti), the power which certain tissues in animals and plants have during life, of shortening themselves. It may be either voluntary or involuntary.

Contractions (kon-trak'shuns), abbreviations employed with the view of saving labor in writing, and also in former times with the view of saving parchment in extending MS. copies of works, deeds, etc. Contraction takes place in several modes, as by elision; writing a smaller letter above the word contracted; running two or more letters into one character; by symbols representing syllables or words; by initial letters; thus: *recd*, for *received; qam* for *quam; Mr.* for *Master;* & for *et*; *p* for *per; S.P.Q.R.* for *Senatus populusque Romanus.* When the contraction consists of the initial letter, syllable, or syllables of a word, as *ult.* for *ultimo*, it is more correctly termed an *abbreviation.* See *Abbreviations.*

Contralto (kon-tral'tō), in music, the highest voice of a male adult, or the lowest of a woman or a boy, called also the *Alto*, or when possessed by a man *Counter-tenor.* It is next below the treble and above the tenor, its easy range being from tenor G to treble C.

Contrate-wheel (kon'trāt), a wheel having the teeth projecting perpendicularly to the plane of the wheel.

Contravallation (kon-tra-val-lā'shun), in fortification, a line formed in the same manner as the line of circumvallation, to defend the besiegers against the enterprises of the garrison.

Contrayerva (kon-tra-yer'va), the aromatic, bitterish root of *Dorstenia Contrajerva*, a plant of the nettle family, imported from tropical America, and used as a stimulant and tonic.

Controller (kon-trō'ler), a public officer appointed to control, oversee, or verify the accounts of other officers.

Contumacy (kon'tū-ma-si), in law, disobedience of the orders of a court; the offense of non-appearance when summoned judicially.

Conus (kō'nus), a genus of gasteropodous molluscs, the type of the family Conidæ or cone-shells, so named from the conical form of the shell. They are found in the southern and tropical seas.

Convales'cent Hospitals, hospitals intermediate between ordinary hospitals and the homes of the patients, established in order that those who have been successfully treated may be fully restored to health and strength before going back to their former unsanitary surroundings.

Convallaria (kon-va-lā'ri-a), a genus of plants, nat. order Liliaceæ, the only species being the lily-of-the-valley. Convallamarin and convallarin are two glucosides obtained from the plant and are used in functional affections of the heart and in cardiac dropsy for their stimulating effect on the heart.

Convection of Heat, the transference of heat by means of the upward motions of the particles of a liquid or gas which is heated from beneath. See *Heat.*

Convent (kon'vent), a religious house inhabited by a society of monks or nuns. See *Monastery.*

Conventicle (kon-ven'ti-kl), a private assembly or meeting for the exercise of religion. Historically, the term was specially applied to meetings of petty sects and dissenters in the statutes of the time of Charles II.

Convention (kon-ven'shun; Latin, *conventio*, a meeting), a formal or statutory assembly, particularly of delegates or representatives, for discussing civil or political matters. In Great Britain the name *Convention Parliament* is given to the assembling of Parliament without the king's writ; as in 1660, when Charles II was restored, and in 1688, when the throne was left vacant by the flight of James II.—*National Convention*, in French history, the name given to that body which met after the legislative assembly had pronounced the suspension of the royal functions (September, 1792), and proclaimed the republic at its first sitting.

Conversano (kon-ver-sä'nō), a town in South Italy, province of Bari, 18 miles S. E. of Bari, with a fine cathedral, and a trade in wine, oil, almonds, flax and cotton. Pop. 13,685.

Conversazione (-sat-si-ō'ne), a reception, usually on a large scale and in the evening, at which the company move about, converse with

their acquaintances, partake of tea, coffee, or other refreshments, and often have objects of art, science, or general interest set out for their inspection.

Conversion (kon-vėr'shun), a term in logic. A proposition is *converted* when the predicate is put in the place of the subject, and the subject in place of the predicate; as, 'no A is B' ('no virtuous man is a rebel'), the converse of which is 'no B is A' ('no rebel is a virtuous man'). Simple conversion, however, in this manner is not always logical. In the case of universal affirmatives, for example, 'all A are B' (say, 'all men are animals'), the simple converse 'all B are A' ('all animals are men') would not be true.

Converter (kon-vėr'tėr), the vessel used in the Bessemer steel-making process which holds the molten iron or carbide of iron which is to be converted into steel.

Convex (kon'veks; Latin *conveæus*, vaulted, arched), rising in a circular or rounded form; the contrary to *concave* (which see). Thus the inside of a watch-glass is concave, the outer surface convex.

Convex Lens. See *Lens*.

Conveyancing (kon-vā'an-sing), the practice of drawing deeds, leases, or other writings (*conveyances*) for transferring the title to property from one person to another, of investigating the title of the vendors and purchasers of property, and of framing those multifarious deeds and contracts which govern and define the rights and liabilities of families and individuals. The business of conveyancing is carried on by barristers, solicitors, and members of the legal profession generally.

Convict (kon'vict), the general term for a person who has been found guilty of a serious offense and sentenced to penal servitude, such servitude consisting at times of forced labor on some public work. In England transportation was formerly the equivalent punishment.

Convocation (kon-vō-kā'shun), an assembly of the clergy of England, belonging either to the province of Canterbury or to that of York, to consult on ecclesiastical matters. From the fact that the province of Canterbury is by much the more influential of the two provinces into which England is ecclesiastically divided, the convocation of the province of Canterbury is often spoken of as *the* convocation, as if there were only one. In former times convocations had the power of enacting canons; but this power was virtually abolished by the statutes of Henry VIII and Elizabeth.

Convolvulaceæ (kon-vol-vū-lā'se-ē), a natural order of plants comprising about 700 species largely consisting of climbers. Some of them have valuable properties. Jalap is derived from the *Exogonium* or *Ipomœa purga*, an inhabitant of Mexico.

Convolvulus (kon-vol'vū-lus), a genus of plants, type of the nat. order Convolvulaceæ, consisting of slender twining herbs with milky juice, bell-shaped flowers, and five free stamens. Some species are commonly known as bind-weeds (*C. arvensis*); others are cultivated in gardens. *C. tricolor*, or minor convolvulus, with its large flowers of violet blue, with white and yellow center, is a familiar species. Scammony is obtained from the root of the *Convolvulus Scammonia*, a native of Syria; the liqueur *noyau* from *C. dissectus*. Some species, like the *C. Batatas*, or sweet-potato, have tuberous and fleshy roots capable of being used as food. *Convolvulus Jalapa* was long considered as yielding the true jalap of commerce. This is now known to be procured from *Exogonium* or *Ipomœa purga*, an allied plant, found in the mountainous regions of Mexico.

Convoy (kon-voi), a fleet of merchantmen under the protection of a ship or ships of war, or the ship or ships appointed to conduct and defend them from attack and capture by an enemy. In military language it is used for *escort*.

Convulsion (kon-vul'shun), a violent, involuntary, spasmodic muscular contraction or series of contractions, with alternate relaxations. Convulsions are universal or partial, and have obtained different names according to the parts affected, or the symptoms. The muscles principally affected in all species of convulsions are those immediately under the direction of the will, as those of the eyelids, eye, face, jaws, neck, superior and inferior extremities. Convulsions are produced commonly by irritation of some part of the brain or spinal cord, such as the general convulsions in inflammation of the brain membranes or of the nerves themselves. Children of a nervous temperament are often the subjects of convulsions during dentition, particularly when accompanied by a disordered state of the bowels or the presence of worms.

Convulsionists (kon-vul'shun-ists), CONVULSIONARIES, those fanatics of the eighteenth century in France who had or affected to have convulsions, produced by religious im-

pulses. The name was first applied to fanatics who exhibited varied seizures at the tomb of a Jansenist at St. Médard, some jumping, some barking, and others mewing like a cat.

Conway (kon'wā), or ABERCONWAY, a town and very ancient borough of North Wales, in Carnarvonshire, about 13 miles E. N. E. of Bangor, at the mouth of the Conway. It is notable for its old castle built by Edward I, a suspension bridge built by Telford, and a tubular railway bridge by Stephenson. Pop. 5242.—The river Conway has a course of about 30 miles through much romantic scenery.

Conway, HENRY SEYMOUR, an English field-marshal, born in 1720, second son of the first Lord Conway. He was aide-de-camp to the Duke of Cumberland at Culloden in 1746, commanded as lieutenant-general in Germany in 1761, was Secretary of State in the Whig cabinet 1761–68, was made commander-in-chief of the army in 1782, and moved in Parliament to cease hostilities against the United States. In allusion to this Burke said, 'All England, all America, joined in his applause.' He died in 1795.

Conway, MONCURE DANIEL, author and preacher, born in Stafford Co., Virginia, in 1832; died in 1907. He entered the Methodist ministry in 1849, but afterwards became a distinguished Unitarian pastor and an earnest antislavery advocate. He became pastor of a congregation in London in 1863. He wrote *The Golden Hour, Demonology and Devil Lore, The Wandering Jew, Pine and Palm, Life of Thomas Paine*, etc.

Conwell, RUSSELL H., American clergyman, born at Worthington, Mass., February 15, 1843. After serving in the Civil War and as newspaper correspondent, he was ordained to the ministry and became pastor of Grace Baptist Church, Philadelphia. This church, now known as the Baptist Temple, has prospered greatly under his administration. He has also founded the Temple College (now Temple University, which see) and the Samaritan Hospital.

Cony, CONEY (kō'ni), an old name for the rabbit; used also in the English version of the Bible as a translation of a Hebrew word probably meaning the *Hyrax Syriăcus*, a rabbit-like animal common in Syria and Palestine, inhabiting clefts of rocks. See *Hyrax*.

Conyza (kō-nī'za), a genus of plants, nat. order Compositæ, annual or perennial herbs, scattered over the warmer regions of the earth, a few being found in temperate countries. None possess properties of any value. In England *C. squarrōsa* is called *fleabane* because of its supposed property, when powdered and sprinkled, of driving away fleas.

Cooch-Behar, or KUCH-BEHAR' (kōch-be-här'), a native state in India, in political relation with the government of Bengal. It forms a level plain of triangular shape, intersected by numerous rivers, and is entirely surrounded by British territory. The greater portion of the soil is fertile and well cultivated. Area, 1307 sq. miles; pop. 567,037.—The chief town, COOCH-BEHAR, contains some handsome public buildings and a splendid new palace of the maharajah. Pop. 12,000.

Cook, JAMES, a famous British navigator, born in Yorkshire in 1728, of parents not above the rank of peasantry. He was at first apprenticed to a shopkeeper; but acquiring a love for the sea, he became a sailor. In 1755 he entered the royal navy, and four years later, as sailing master of the *Mercury*, performed valuable services in surveying the St. Lawrence River and the coast of Newfoundland. Some observations on a

Captain Cook

solar eclipse, communicated to the Royal Society, brought him into notice, and he was appointed commander of a scientific expedition to the Pacific. During this expedition he successively visited Tahiti, New Zealand, discovered New South Wales, and returned by the Cape of Good Hope to Britain in 1771. In 1772 Captain Cook, now raised to the rank of a commander in the navy, com-

manded a second expedition to the Pacific and Southern Oceans, which resulted, like the former, in many interesting observations and discoveries. He returned to Britain in 1774. Two years later he again set out on an expedition to ascertain the possibility of a northwest passage. On this voyage he explored the western coast of North America, and discovered the Sandwich Islands, on one of which, Hawaii, he was killed by the natives, February 14, 1779. Captain Cook wrote and published a complete account of his second voyage of discovery, and an unfinished one of the third voyage, afterwards completed and published by Captain James King.

Cooke, JAY, banker, born at Sandusky, Ohio, in 1821; died in 1905. He engaged in the banking business at Philadelphia in 1842 and established a new firm in 1861, which did a large and useful business as a government agent in placing war-loans. It subsequently financed the Northern Pacific Railroad, this leading to the failure of the firm in 1873, the first event in the great financial panic of that year. The later success of the Northern Pacific Railroad restored Mr. Cooke's wealth.

Cooke, JOHN ESTEN, author, born at Winchester, Virginia, in 1830; died in 1886. His works include *The Virginia Comedians*, *Lorry of Eagle's Nest*, *The Last of the Forests*, *Hammer and Rapier*, also *History of Virginia*, *Life of Robert E. Lee*, etc.

Cooke, ROSE TERRY, authoress, born at West Hartford, Connecticut, in 1827; died in 1892. She wrote *Somebody's Neighbors*, *Huckleberries*, *Poems by Rose Terry*, etc., most of her writings being short tales of much power and literary merit.

Cookery (kụk'e-ri), the preparation of food so as to render it more palatable and more digestible. The art is of great importance, not only for comfort, but also for health. Food is mainly prepared by submitting it to the action of fire as by roasting, boiling, stewing, etc. Each of these processes develops a different flavor in food, but they result alike in rendering the tissues, both of animal and vegetable food, softer and much more easily dealt with by the digestive organs. The art of cookery was carried to considerable perfection among some of the ancient nations, as for instance the Egyptians, Persians, and Athenians. Extravagance and luxury at table were notable features of Roman life under the empire. Among moderns the Italians were the first to reach a high degree of art in this department. Their cooking, like that of the ancient Romans, is distinguished by a free use of oil. Italian cookery seems to have been transplanted by the princesses of the House of Medici to France, and was carried there to perhaps the highest degree of perfection; even yet the skill and resource which the French cook shows in dealing often with very slight materials is a highly creditable feature in the domestic economy of the nation. No other people seems to have equaled the French in this art.

Cook's Inlet, an inlet of the North Pacific Ocean, running into the territory of Alaska for about 150 miles; explored by Captain Cook in 1778.

Cook's Islands, a name of the Hervey Islands, given to them because discovered by Captain Cook. See *Hervey Islands*.

Cook's Strait, the channel which separates the two principal islands of New Zealand, discovered by Captain Cook in 1770.

Cookstown (kụks'toun), a town of Ireland, County Tyrone, 10 miles north of Dungannon; has manufactures of linen and large trade in flax. Pop. 3531.

Coolers (kōl'ers), WATER, vessels of porous, unglazed earthenware, in which a liquid can be kept cool by constantly exuding through the substance of the ware and evaporating from the outer surface of the vessel.

Coolie (kō'lē; Tamil, *kuli*), a name in Hindustan for a day laborer, also extended to those of some other eastern countries. Many of these have been introduced into the West Indies, Mauritius, and other places, their passage being paid for them on their agreeing to serve for a term of years. The first coolie emigrants appear to have been those sent to British Guiana from Calcutta in 1839 to supply the want of labor felt after the abolition of slavery. The coolies employed in Guiana are chiefly from India.

Cooley (kō'lē), THOMAS M., jurist, born at Attica, New York, in 1824. He removed to Michigan in 1843, studied law, and in 1859 became professor of law in Michigan University. He was a justice of the Supreme Court of Michigan in 1864; chief justice in 1867; retired from the bench in 1885, and was appointed by President Cleveland on the Interstate Commerce Commission, of which he was chairman. He resigned in 1891 and died in 1898. He ranked among the highest of constitutional jurists and was the author of

numerous legal works, chiefly based on the Constitution of the United States.

Coolidge (kō'lij), CALVIN (1872-), an American public official, born on a farm in Vermont, educated at Black River Academy and Amherst College (graduated 1895). He practised law in Northampton, Mass., and was successively mayor, assemblyman, State senator, lieutenant-governor and governor. His firm stand for law and order during the police strike in Boston, in September, 1919, brought him into national prominence, and in 1920 he was elected vice-president of the United States, being the nominee of the Republican party, with Warren G. Harding as president.

Coomassie. See *Kumassie.*

Coombe (kōm), WILLIAM (1741-1823), a British author, born at Bristol. He wrote the *Diaboliad;* the *Devil Upon Two Sticks in England,* a continuation and imitation of Le Sage's novel; the *Tour of Dr. Syntax in Search of the Picturesque; English Dance of Death,* etc., all illustrated by Rowlandson.

Coomptah (kōm'ta), a town of India on the sea-coast, in the presidency of Bombay, about 330 miles S. S. E. of Bombay. It has an open roadstead and a large cotton trade. Pop. 10,629.

Cooper (kup'er), SIR ASTLEY PASTON, an English surgeon, was born in Norfolkshire in 1768; died in 1841. He studied medicine in London, and attended the lectures of John Hunter. After visiting Paris in 1794 he was appointed professor of anatomy at Surgeon's Hall, and in 1800 head surgeon of Guy's Hospital. He became a very eminent surgeon. In 1822 appeared his great work on *Dislocations and Fractures.* Shortly afterwards he became president of the Royal College of Surgeons, and honors and titles of every kind poured in on him.

Cooper, JAMES FENIMORE, an American novelist, born at Burlington, New Jersey, in 1789, studied at Yale College, and entered the American navy as a midshipman at the age of sixteen. In 1821 appeared the novel of *Precaution,* the first production of his pen. Though successful, it gave no scope for his peculiar powers, and it was not till the production of the *Spy* and the *Pioneers* that he began to take a high place among contemporary novelists. After that came a steady flow of novels dealing with life on the sea and in the backwoods, most of which, like the *Pilot, Red Rover, Waterwitch, Pathfinder, Deerslayer* and *Last of the Mohicans,* are familiar names to the novel-reading public. After visiting Europe and serving as consul for the United States at Lyons for three years, Cooper returned to America, where he died at Cooperstown, New York, in 1851. Besides his novels he wrote a history of the United States Navy and some volumes descriptive of his travels.

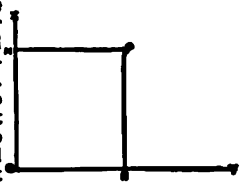
Cooper, PETER, an American inventor, manufacturer, and philanthropist, born in 1791; died in 1883. He started life with few advantages, being almost self-educated; but by dint of energy, perseverance, sagacity and integrity, accumulated a large fortune. He carried on the manufacture of glue and isinglass for over fifty years, and was also connected with the iron manufacture, the railways (he designed and built the first American locomotive), and the telegraphs of the United States. The 'Cooper Union' in New York was established by him to furnish a free education in art and practical science. It comprises day classes, in which women are instructed in drawing, painting and other branches of art; evening classes, in which young men and women are taught art, engineering, chemistry, mathematics, etc.; free reading-room and library, etc.

Coöperative Societies (kō-op'er-ā-tiv), are associations of individuals for mutual assistance in industrial or commercial objects. One form of coöperative societies is that of an association of men belonging to some trade or industry for the purpose of carrying it on entirely by their own efforts, and thus securing all the profits of their labors to themselves; but much more common associations are those the object of which is to provide the members, and sometimes also the general public, with the ordinary household necessities, at as near as possible the prime cost. Associations of the former kind are thus associations for production, those of the latter for distribution, by means of what are commonly known as *Coöperative Stores.* Coöperative societies of the latter kind have been established very widely in Great Britain, one of the first and most successful of them being the Rochdale Equitable Pioneers' Society. This, like others, is conducted on the principle of dividing the surplus profits among the members alone in proportion to their purchases, after a certain fixed percentage has been deducted for interest on the capital subscribed. This society commenced in 1844 with only seventeen members; it has now 6000 or 7000, and sells goods annually to the value of

more than $1,300,000. A striking feature in connection with the societies in the North of England, where they are very numerous and flourishing, is the formation of an association of coöperative societies, The North of England Co-operative Wholesale Society, for the purpose of making their purchases on as large a scale as possible, so as to increase the profits. There are now in Great Britain about 1300 societies, with sales amounting to $150,000,000 a year. Similar associations have been formed for the benefit of other than the working classes, such as clergymen, lawyers, medical practitioners, officers in the army and navy, members of the civil service, etc. The *Civil Service Supply Association of London* is the most extensive of these, and has been very successful, the annual sales amounting to about $8,500,000. Manufacturing associations of all kinds have been tried on the European continent, but neither there nor in Britain have they, on the whole, been very successful. In these societies, generally called Working Men's Associations, the shareholders are usually also the workmen, and the surplus profits are divided among them as workmen after they have received the fixed percentage as shareholders, and in some cases also among the workmen who are not shareholders, if there are any such. In Germany there are societies for the purchase of raw materials, manufacturing associations, societies of united shops, and coöperative stores. In the United States coöperation has as yet chiefly taken the form of building-loan associations for providing the members with houses of their own, productive and distributive societies having made slow progress. See also *Building Societies* and *Friendly Societies*.

Cooper's Creek, or the BARCOO, called by the latter name chiefly in its upper course, the largest inland river of Australia, which rises in Queensland by two branches, the Thomson and Victoria (or Barcoo), and flows southwest to Lake Eyre.

Coördinates (kō-or'di-nāts), in geometry, a term applied to lines, to which points under consideration are referred, and by means of which their position is determined. Coördinates either determine the position of a point in space or in a plane which is understood to contain all the figure under consideration. They determine position by straight lines only, or by a straight line and angles; in the latter case they are called *polar* coördinates. When coördinates are at right angles to each other they are called *rectangular* coördinates, and when they make any other angle with each other they are called *oblique* coördinates. In the fig. OX OY are two fixed lines at right angles to each other, and P is a point whose position is to be determined.



Coördinates.

If we know ON and OR we can easily find the position of P, of which ON OR are called the coördinates.

Coorg (körg), or KURG, an ancient principality now a province in Southern Hindustan, lying between Mysore on the east and northeast and the districts of South Canara and Malabar on the west; area, 1583 sq. miles. The country has a healthy climate and yields coffee, spices, timber, etc. The capital is Merkara. Pop. 180,607.

Coos (kō-os). See *Cos*.

Coosy (kö'si), a river of Northern Bengal, which rises among the Nepaul Himalayas, flows in a southerly direction, and falls into the Ganges after a course of 325 miles.

Coot (köt), a grallatorial bird of the rail family (Rallidæ), frequenting lakes and ponds. The common coot (*Fulica atra*) has a bald forehead, a black body, and lobated toes, and is about 15 inches in length. The nests, which are very large, strong, and compact, are composed of reeds and rank water-herbage, built sometimes near the water's edge, and sometimes on small islets at some distance from the shore. Should the nest be set adrift by a rise of water, the female coot seems in nowise disturbed, but sits composedly on her eggs until it is stranded. The coot of India, China and Japan is said to be identical with that of Europe, but the North American coot is now recognised as a distinct species, and has received the name of *F. Wilsoni*.

Copaiba, COPAIVA (ko-pā'ba, ko-pā'va), the name of a balsam and an oil. The balsam is a liquid resinous juice flowing from incisions made in the stem of a plant, *Copaifera officinalis* (nat. order Leguminosæ), and several other species of the genus, growing in Brazil, Peru, etc. It consists of several resins dissolved in a volatile oil. The resins are partly acid and partly neutral; the oil is clear, colorless and has an aromatic odor. It is used in

medicine, especially in affections of the mucous membranes (as those of the urino-genital organs).

Copaiba Plant (*Copaifera officinalis*).

Copais (ko-pā'is), or TOPOLIAS, a lake or marsh of Greece in Bœotia, enclosed by mountains on every side, and forming a shallow expansion of the river Cephissus some twenty miles broad, the water having numerous subterranean outlets to the sea. In 1881 a French company was formed for draining the lake or marsh, and thus redeeming some 62,000 acres of land. Operations were commenced in 1881, and the drainage was completed before the end of the century.

Copal (kō'pal) is a gum-resin yielded by different trees in Africa, South America, India and Australia, and differing considerably in quality in its several varieties; but in general it is hard, shining, transparent, and citron-colored. When dissolved in alcohol or turpentine it makes a beautiful and very durable varnish. Indian copal, known in England as *gum animé*, is produced by *Vateria Indica;* Madagascar copal from *Hymenæa verrucōso;* Brazilian copal from several species of *Hymenæa* and *Icica*, and from *Trachylobium martianum*. A substance called *fossil copal* or *copolin* is found in some places. It resembles copal resin in color and odor.

Copalche Bark (kō-pal'chā), the bark of the *Strychnos pseudoquina* (order Euphorbiaceæ), a native of Brazil. The name is also given to the bark of *Croton pseudochina* (order Loganiaceæ) of Mexico. It resembles cascarilla bark in its properties.

Copan (kō-pan'), an ancient ruined city of Honduras, Central America, on the Copan River, with some remarkable remains of Indian origin.

Coparcenary (kō-pär'se-na-ri), in law, partnership in inheritance; joint heirship in which each is entitled to a distinct share of the benefits, while the property remains undivided.

Copartnership. See *Partnership*.

Cope (kōp), a sacerdotal vestment, resembling a sleeveless cloak with a hood reaching from the shoulders to the feet, worn on solemn occasions,

COPE.

A, Probably Dr. Robert Langton, Queen's Coll. Oxon. 1. Cope. B. Figure from Pugin's Glossary. 222, Cope.

and particularly in processions, by the pope and other bishops as well as by priests. It was one of the vestments retained at the Reformation in the Anglican Church.

Cope, CHARLES WEST, an English painter, born in 1811, studied at the Royal Academy and in Italy, and first exhibited at the academy in 1831. In 1843 he gained a prize of £300 for his picture *The First Trial by Jury;* in 1844, by his fresco the *Meeting of Jacob and Rachael*, he secured the commission for one of six frescoes for the House of Lords, producing accordingly *Edward the Black Prince receiving the Order of the Garter*. He executed eight frescoes from English history of the seventeenth century for the House of Lords, while his other works were numerous, the subjects being historical, romantic, or domestic. He also produced *Last Days of Cardinal Wolsey, Departure of the Pilgrim Fathers, L'Allegro and Il Penseroso, Milton's Dream, Shylock and Jessica, Ann Page and Slender, Lear and Cordelia*. He became A.R.A. in 1844 and R.A. in 1848, but retired in 1883, and died in 1890.

Cope, EDWARD DRINKER, an eminent naturalist, born at Philadelphia, Pennsylvania, in 1840; died in 1897. He was professor of natural history at

Haverford College 1864-67, and for many years paleontologist to the United States Territorial Surveys. In 1884 he was appointed curator of the National Museum in Washington, in 1891 became professor of geology in the University of Pennsylvania, and in 1896 was president of the American Association for the Advancement of Science. He gave special attention to comparative anatomy and did excellent work in the systematic arrangement of the fishes and batrachians and some groups of reptiles and mammals. He discovered and described over 1000 species of fossil vertebrata and made extensive explorations in the fossil-bearing strata of the western United States and elsewhere. He made important contributions to the theory of evolution, writing *Origin of the Fittest* and *Primary Factors of Organic Evolution*, also many works and papers on systematic anatomy and descriptions of the Cretaceous and Tertiary Vertebrates. His *Extinct Vertebrata of the Eocene Formations of Wyoming* describes some of the most remarkable types of mammalia ever discovered. He purchased the *American Naturalist* in 1891 and edited it till his death.

Copeck (kō'pek; *kopeika*, a lance), a Russian copper coin, so called from the impression of St. George bearing a lance, the hundredth part of a silver rouble, or about the eightieth part of a paper rouble. It is equal in value to about three-fourths of a cent.

Copenhagen (kō-pen-hā'gen; Danish *Kjöbenhavn*, merchants' haven), the capital of Denmark, on the Sound, the larger and older portion of it on the east side of the Island of Zealand, a smaller portion on the north point of the island of Amager, with a branch of the sea forming the harbor between them. The old fortifications, which formerly separated the city from its extensive suburbs, have been leveled and converted into promenades, and a modern system of fortifications constructed on a grand scale, far beyond the site of the old town and embracing canals to flood the approaches to the city. These convert it into a great stronghold. The city is mostly well built, principally of brick. The chief buildings are the royal palace of Rosenborg with many antiques and precious articles; the Amalienborg, consisting, properly speaking, of four palaces, one of them the usual residence of the sovereign; the palace of Charlottenborg, now the repository of the Academy of Arts; the Royal Library, containing 550,000 volumes and 25,000 manuscripts; Thorwaldsen's Museum, containing a great many of the sculptor's works; the university buildings, the Vor Frue Kirke, the arsenal, etc. The university, founded by Christian I in 1478, has over 2000 students, and a library of 300,000 volumes. The museum of Northern antiquities and the ethnographic museum, founded in 1892, are unrivaled of their kind. The harbor is safe and commodious. Copenhagen is the principal station of the Danish fleet and the center of the commerce of Denmark. It carries on an active trade with Norway, Sweden, Russia and Germany, and in particular with Britain, the principal exports being grain, butter, cheese, beef, pork, cattle, horses, hides, etc. It has foundries and machine-works, extensive shipyards, woolen and cotton mills, porcelain works, breweries, distilleries, etc., and produces also watches, clocks, pianofortes, etc. Sugar-refining and tanning are carried on. Copenhagen is first mentioned as a fishing hamlet in 1043. In 1443 it was made the capital of Denmark. It has occasionally suffered much from fires and from hostile attacks, the most disastrous being the bombardment by the British from the 2d to the 5th of September, 1807. In 1801 the Danish fleet was here defeated by Sir Hyde Parker and Nelson. The environs in some parts are very fine. Pop. with suburbs, in 1911, 559,398.

Copepoda (ko-pep'o-da), an order of minute entomostracous fresh-water and marine crustacea, so named because their five pairs of feet are mostly used for swimming (Gr. *kopē*, an oar).

Copernicus (ko-per'ni-kus), or KOPPERNIGK, NICHOLAS, astronomer, born at Thorn, then in Poland, in 1473, his family being supposed to have come originally from Westphalia. He first studied medicine at Cracow, and afterwards devoted himself to mathematics and astronomy, and in 1500 taught mathematics at Rome with great success. Returning to his own country, he was made canon in the cathedral of Frauenburg, and began to work out his new system of astronomy. Doubting that the motions of the heavenly bodies could be confused and so complicated as the Ptolemaic system (which see) made them, he was induced to consider the simpler hypothesis that the sun was the center round which the earth and the other planets revolve. Besides this fundamental truth Copernicus anticipated, for he can scarcely be said to have proved, many other of the principal facts of astronomical science, such

as the motion of the earth round its axis, the immense distance of the stars which made their apparent position the same from any part of the earth's orbit, etc. His general theory also enabled him to explain for the first time many of the important phenomena of nature, such as the variations of the seasons and the precession of the equinoxes. The great work in which Copernicus explained his theory, *De Orbium Cœlestium Revolutionibus* ('On the Revolutions of the Celestial Orbs'), was completed in 1530, and published at Nuremberg in 1543. He was not excommunicated on account of it. He died at Frauenburg in 1543.

Copiapó (kō-pe-a-pō'), the name of a river and a town in Atacama, Chile. The river flows west from the Andes to the Pacific, and has a course of 155 miles. About 30 miles from the sea is the town of Copiapó, or San Francisco de la Selva, the center of an important mining district. Pop. 10,287. The seaport, Caldera, stands at the mouth of the river and has about 2800 inhabitants.

Coping (kō'ping), the top or upper covering of a wall made to project and slope so as to carry the rainwater clear of the wall.

Copley (kop'lē), JOHN SINGLETON, a self-taught and distinguished painter, born in 1737 at Boston, Massachusetts; died in London in 1815, where he had settled in 1776, acquiring a reputation as a historical painter. He was elected a member of the Royal Academy in 1779. His most celebrated picture is the *Death of Lord Chatham*, now in the National Gallery. His son became Lord Lyndhurst.

Coppee (kop-pā'), HENRY, author, born at Savannah, Georgia, in 1821, was graduated at West Point in 1845. He served in the army through the Mexican war, resigning in 1855 and becoming professor of English literature in the University of Pennsylvania. He was president of Lehigh University 1866-75, afterwards professor of history there, and in 1874 was made a regent of the Smithsonian Institution. He wrote *Elements of Logic*, *Elements of Rhetoric*, *Conquest of Spain by the Arab-Moors*, etc. Died in 1895.

Copper (kop'er), one of the most anciently known metals, deriving its name from *Cyprus*, large supplies having in Greek and Roman times come from that island. It is a metal of a pale-red color tinged with yellow; chemical symbol Cu, atomic weight 63.2. Next to gold, silver and platinum it is the most ductile and malleable of metals; it is more elastic than any metal except steel, and the most sonorous of all except aluminium. Its conducting power for heat and electricity is inferior only to that of silver. It has a distinct odor and an unpleasant, metallic taste. It is not altered by water, but tarnishes by exposure to the air, and becomes covered with a green carbonate. It occurs native in branched pieces, dendritic, in thin plates, and rarely in regular crystals, in the primitive and older secondary rocks. Blocks of native copper have sometimes been obtained weighing many tons. Its ores are numerous and abundant. Of these, several contain sulphur and iron or other metal, such as copper glance or vitreous copper (Cu_2S); gray copper or Fahlerz, one of the most abundant and important ores; and copper pyrites or yellow copper ore ($CuFeS_2$), another abundant ore. The red oxide of copper (Cu_2O) forms crystals of a fine red color, and is used for coloring glass. There are two native carbonates, the blue and the green, the latter being the beautiful mineral *malachite*, the former also known as blue malachite. *Blue vitriol* is a sulphate, and is used for dyeing and preparing pigments, as are various other copper compounds. *Verdigris* is an acetate. The arsenite of copper is the pigment *Scheele's green*. *Schweinfurth green* is another copper pigment. All the compounds of copper are poisonous. It is found in most European countries, in Australia and Japan, in Africa and in America, the United States being much the greatest producer. The world's total annual yield of copper is about 1,250,000 metric tons, of which the United States produces from 600,000 to 800,000 metric tons, the great yields being in Arizona, Montana, Michigan, Utah and Nevada.

Copper is extracted from its ores either by the dry or the wet process. For the former, what is known as the Welsh process is most common in the Cornwall mines of Great Britain, and may be described. It consists in alternately roasting the ore, and then smelting it in a furnace with a suitable slag, until impure or *blister copper* is obtained. Before this stage is reached a metallic compound of copper, sulphur and iron has been produced, technically known as *matt*, *regulus*, or *coarse metal*, and subsequently a tolerably pure sulphide of copper called *fine metal*. The blister copper is refined by burning off the sulphur, arsenic, and other volatile impurities, and by melting it along with wood charcoal and stirring it with a

wooden pole. The quality is then tested, and, if found satisfactory, the copper is cast into ingots. In extracting the metal from pyrites by the wet process, the ore is first roasted to get rid of the larger proportion of sulphur, then the calcined residue, still containing sulphur, is mixed with common salt, ground and heated in ovens. The copper is thus converted into chloride, part of which volatilizes, but is condensed along with arsenic and other substances, by passage through flues and water-condensers. After some hours the calcined mixture is raked out of the ovens, cooled, and transferred to tanks, where it is exhausted by successive treatment with water. The solution, containing chloride of copper, sulphate and chloride of sodium, and iron salts, is next heated along with scrap-iron. Copper precipitates in the form of a ruddy, lustrous, tolerably compact mass, with a crystalline appearance, and mixed with metallic iron and oxide. The larger pieces of iron are picked out, the precipitate washed and drained, and then rendered compact by heating in a furnace. A slag containing the oxide of iron forms, and the copper, when judged sufficiently pure, is run into molds. Afterwards this crude metal is refined and toughened in the usual way, and the slags are employed as in the Welsh process. Some of the alloys of copper, especially those containing tin and zinc, are of considerable importance, *e. g.*, *bronze*, an alloy composed of varying parts of copper, and tin; *bell-metal* also produced from an alloy of copper and tin; British bronze coinage, copper 95, tin 4, zinc 1. Copper is applied to a great many useful purposes. In sheets it is used for sheathing the bottoms of ships, covering roofs and domes, the constructing of boilers and stills of a large size, etc. It is also used in electrotyping and engraving, for various household utensils and fittings; but its use for household utensils is by no means free from danger on account of the action of acids on it, which produces verdigris. As it is one of the best conductors of electricity, it is now largely employed for this purpose, especially in conducting the powerful currents used in power transmission.

Copperas (k o p'e-r a s), sulphate of iron, or green vitriol ($FeSO_4.7H_2O$), a salt of a peculiar astringent taste and of a fine green color. When exposed to the air it assumes a brownish hue. It is much used in dyeing black and in making ink, and in medicine as a tonic. The copperas of commerce is usually made by the decomposition of iron pyrites.

Copper Glance (Cu_2S), a copper ore of a lead or iron-gray color. It contains a high percentage of copper, and abounds in Cornwall, England, and in many European countries.

Copperhead, a venomous North American snake, the *Ancistrodon contortrix* of the rattlesnake family, of the same genus as the water-moccasin, but it is not aquatic. While it has no rattle, its bite is as deadly as that of any snake of its size.

Copperheads, an epithet applied to pacifists and disloyal Northerners during the Civil War. The Ohioans are given credit for the first use of the term, probably having in mind the characteristics of the snake of that name. The copperhead snake hides in tall grass or lurks in crannies of rocks and strikes without a previous hint of his animosity. He never comes out into the open. Similar traitorous characteristics were suspected in the pacifist, hence the transfer of the title. During the European war the epithet was revived and applied to those who did not believe in carrying the war to a military conclusion.

Coppermine River, (kop'er-mīn), a river of British North America, which falls, after a course of about 250 miles, into the Arctic Ocean, in lat. 68° N.; long. 116° W.

Copper-nickel, or KUPFERNICKEL, an ore of nickel, an alloy of nickel and arsenic, containing about 60 of the former and 40 of the latter, of copper color, found in the mines of Westphalia and elsewhere. It often accompanies cobalt and silver ores. Called also *niccolite*.

Copper-plate, a polished plate of copper on which the lines of some drawing or design are engraved or etched to be printed from; also a print or impression from such a plate.

Copper Pyrites (pi-rī-tēz), or yellow copper ore, a double sulphide of copper and iron, composed in equal parts of copper, sulphur and iron. It occurs in metalliferous veins and is the commonest of the ores of copper.

Coppice (kop'is), or COPSE WOOD, a wood in which the trees are cut periodically as they attain a certain size. The term is also used in a general sense for a wood of small growth, or consisting of underwood and brushwood.

Copra (kop'ra), the dried kernel of the cocoanut, from which the oil has not been expressed, a consid-

erable article of commerce in many of the Pacific islands.

Coprolites (kop'rō-līts), the term originally applied to the fossil excrements of extinct animals, chiefly lizards or sauroid fishes. They resemble oblong pebbles, and are found mostly in the Lias and Coal Measures. They consist chiefly of phosphates of calcium and magnesium, and the carbonates of the same metals, and organic matter, and as the fertilizing properties of these are well known, coprolites have been largely used as a manure. For this purpose they are reduced to powder and used as ground bones, or treated with sulphuric acid, so as to form superphosphate of lime.

Copse. See *Coppice.*

Coptis (kop'tis), a small genus of plants, nat. order Ranunculaceæ, two species of which, *C. trifolia* (gold thread), found in Canada and the northern parts of the United States, and *C. tecta* of Assam, yield a bitter tonic used medicinally.

Copts (kopts), a name given to the Christian descendants of the ancient Egyptian race, belonging mostly to the Jacobite or Monophysite sect. Reduced by a long course of oppression and misrule to a state of degradation, the number and national character of the Copts have greatly declined. At present they do not amount to more than perhaps 350,000. Their costume resembles that of the Moslems, but they are very generally in the habit of wearing a black turban for distinction's sake. In various other respects they resemble the Moslem, and they practise circumcision and abhor the flesh of swine. The women go out with veiled faces like the Moslem women. There are schools for the male children, but very few of the females are taught to read. Confession is required of all. Fasting holds a prominent place in the life of the Copt, who is, indeed, required to fast (that is, to abstain from all animal food except fish) during the greater part of every year. The head of the Coptic Church is the Patriarch of Alexandria, who is also head of the Abyssinian Church. He is regarded as the successor of St. Mark, by whom the Copts believe that Christianity was introduced among them. They are very strict and exclusive in their religion, but a great number have latterly changed their early faith. The Copts are quiet and industrious, have a good capacity for business, but are said to be servile and crafty. The Coptic scribes form a close guild. What is called the *Coptic language* is no longer spoken, Arabic having taken its place. It is still used, however, in a formal way in their religious services. It is regarded as the direct descendant of the ancient sacred language of the Egyptians. There is a tolerably abundant Coptic Christian literature, chiefly lives of saints, homilies, etc. It is written in what is substantially the Greek alphabet, with some additional letters.

Copy (kop'i), a writing, picture, etc., made in direct imitation of another. Of late years photography has been much used in copying paintings, engravings, maps, etc. Lithography is frequently used in multiplying copies of writings, such as circulars, and such contrivances as the gelatine pad and the papyograph are also in common use. A copy of a work of art made by the artist himself is called a *replica* or *doublette*, and a reproduction of a piece of sculpture in plaster a *cast*.

Copyhold (kop'i-hōld), in English law a tenure of land by copy from the court rolls belonging to a manor. Copyhold property cannot be now created, for the foundation on which it rests is that the property has been possessed time out of mind by copy of court roll, and that the tenements are within the manor. In 1858 Parliament passed a law which enables either the lord or tenant of any copyhold lands to compel enfranchisement of the land and convert it into freehold, either in consideration of a fixed sum or of an annual rent.

Copyright (kop'i-rīt) denotes the property which an author has in his literary works, or which any other person has acquired by purchase, and which consists of the exclusive right of publication; or the right which a designer, engraver, painter, draughtsman, photographer or sculptor has in his designs, engravings, paintings, etc., In the case of encyclopædias, reviews, magazines, and other periodical works, the copyright is vested in the proprietors as if they were the authors. It is, of course, quite competent to the authors of such articles to reserve the right of publishing them in a separate form. Dramatic and musical compositions are subject to the same copyright as books. The exclusive right of performing dramatic and musical compositions not printed or of causing them to be performed belongs to the author or his assignees under the same rules of copyright as those relating to books. Lectures and public speeches are the property of the

author and cannot be published without his consent, unless they are delivered on any public endowment or foundation. In the United States the period over which copyright extends is twenty-eight years from the time of registration. This period may be extended for another twenty-eight years for the benefit of the author himself, his widow, children, assignees, or other representatives. A work must be published with a copyright notice, which may be in the form 'Copyright..... (year, date of publication).....(name of copyright proprietor.)' Two copies of the best edition of the work must then be forwarded to the Copyright Office, Library of Congress, Washington, with an application for registration and a money order for the statutory registration fee of $1. As regards books or periodicals in the English language, it is necessary that the type shall be set, the electrotypes made, and the printing and binding wholly performed within the United States in order that advantage may be taken of her copyright law. The requirements also extend, in general, to the illustrations of a book, and to separate lithographs or photo-engravings. The work, however, may be first published in another country provided it is entered in terms of the United States law within a period varying from thirty to sixty days. Works not in the English language may be printed and bound abroad, and yet be eligible for copyright here.

In 1885–86 a convention was held at Berne between representatives of a large number of nations for the purpose of considering the question of international copyright. As a result of their deliberation an agreement was reached whereby a work copyrighted in one country should receive the same privileges in all. In 1909 a congress held at Berlin proposed that the uniform term of the life of the author and fifty years should be adopted by all the parties to the Berne convention. Another provision prevented the United States from acceding, as at that time all works (now works in the English language only) had to be manufactured here, in order to obtain the privilege of copyright. The act of 1909, however, enables copyright agreements to be entered into with other countries, and the existence of such an agreement with Britain practically enables books manufactured in the United States to obtain all the benefits of the Berne Convention. The United States has also copyright agreements with a number of other countries.

The remedy for an infringement of copyright is an action of damages against the infringer.

Coquelin (kok-lan), BÉNOIT CONSTANT, a French actor, born at Boulogne-sur-Mer in 1841; died in 1909. He made a successful first appearance in 1860 at the Théâtre Français and quickly rose to the head of his profession, excelling in light comedy and melodrama.

Coquetta Bark (ko-ket'a), a name given to the bark of *Cinchona lancifolia*, which contains quinine.

Coquillanut (ko-kwil'la), the seed of the piassava or piaçaba palm (*Attalēa funifĕra*), one of the cocoanut group, a native of Brazil. The nuts are 3 or 4 inches long, oval, of a rich brown color and very hard, and are used in turnery for making umbrella-handles, etc.

Coquimbo (ko-kim'bō), or LA SERENA, a town of Chile, capital of the province of Coquimbo, stands near the sea, on a river of the same name. It is the see of a bishop. Pop. 16,161.—PORTO COQUIMBO, the port of the above, from which it is distant 7 miles to the S. W., has smelting works and a large export trade, chiefly in copper and the precious metals. Pop. 6270.—The province is rich in copper, silver, gold, and other metals, and is mountainous. Pop. 165,000.

Coquito (kō-kē'tō), the *Jubœa spectabilis*, a very beautiful palm of Chile, allied to the cocoanut palm, growing to the height of 40 to 50 feet, and yielding a rich, sweet sap which when boiled is called palm-honey.

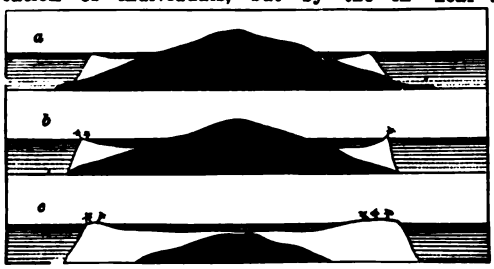
Coracias. See *Rollers*.

Coracle (kor'a-kl), a small boat or canoe of oval form and made of wickerwork covered with skins. It was used by the ancient Britons, and something similar is still in use among Welsh fishermen and on the Irish lakes.

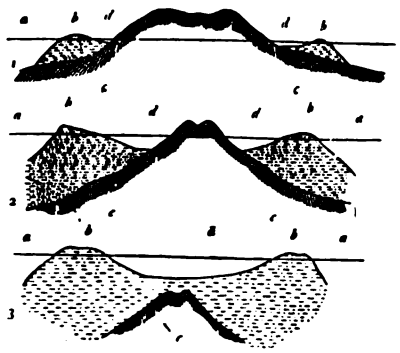
Coracoid Bone (kor'a-koid), a bone in birds joining the sternum and shoulder-bone, and giving support to the wing. In mammals it is represented by the *coracoid process* of the scapula.

Coral (kor'al), the name applied to the calcareous, stony structures secreted by many of the *Actinozoa* (sea-anemones, etc.) which form one of the divisions of the cœlenterate zoophytes, and also applied to the animals themselves. Two kinds of corals are distinguished by naturalists, *sclerodermic* and *sclerobasic*, or those in which the calcareous skeleton is developed in the walls of the body, as in the reef-building corals, and those in which (as in

the red coral of commerce) the skeleton is external or cuticular. Reproduction takes place by ova, but chiefly by budding, the new individual remaining in organic union with the old. The coral masses grow not merely by the multiplication of individuals, but by the increase in height of each of the latter, which, as they grow, become divided transversely by partitions. The animal, distended with ova, collapses on their discharge, and thus becomes too small for the cup which it formerly occupied; it cuts off the waste space by a horizontal layer of coral, and the repetition of this process gradually adds to the height of the mass. It is in this way that the coral reefs and islands, occurring in such abundance in the Pacific, the Indian Ocean, and the Red Sea, are built up—works of such stupendous and astonishing bulk when compared with the tiny creatures that produce them.



Formation of Coral Reefs, according to Darwin.



Structure of Coral Reefs.

1, Fringing-reef; 2, Barrier-reefs; 3, Atoll; *a*, Sea-level; *b*, Coral-reefs; *c*, Primitive land; *d*, Portion of sea within the reef, forming a channel or lagoon.

These coral reefs appear under three principal types, namely the *fringing* reef the *barrier* reef, and *atoll* or *lagoon* reef. According to Darwin's theory, the latter two are merely developments of the first. The fringing reef on the margin, say, of a South Sea island (see *a* in the figure) is the work of corals living near the shore. This island is supposed gradually to subside into the sea, but so slowly as to allow the coral polyps, which cannot exist at a greater depth than between 20 and 30 fathoms from the surface, to add to the height of the reef and keep themselves always at the same level. Thus, in the course of time, as the island sinks in the constantly receding margin, the coral formation will no longer be a fringing reef, but will stand out at sea, with water on all sides betwixt it and the island. In this way the barrier reef is formed (as in *b*). But should the island continue to sink till it disappear altogether, the reef is then left as a huge circle enclosing a lagoon and constituting the atoll (*c*). By accretions of various kinds this finally rises above the surface of the sea, is taken possession of by a tropical vegetation, and at length becomes the habitation of man. Darwin's theory is by many not considered satisfactory, however, and these offer an explanation of the formation of the coral reefs without the process of subsidence.

The coral of commerce is the production of various polyps, and is of different colors and internal structure. The red, pink, and black sorts are the most highly prized. The red coral has a branching, shrub-like form, and, with other kinds, is found abundantly in the Mediterranean. The coral fishery, as it is called, is carried on in various parts of the Mediterranean, the principal localities being the southwest coast of Corsica, where the finest quality is found, the coast of South Italy, and the north coast of Africa (Algeria and Tunis). The raw coral is wrought chiefly in Leghorn, Genoa and Naples. The coral is brought up from the bottom by means of network bags with wide meshes, attached to crossbeams of wood that are let down from a vessel by a line. Italy takes the leading part both in fishing for coral and in its preparation for the market. Coral is capable of taking a good polish, but is not susceptible of receiving the finer execution of a gem. In composition it consists chiefly of carbonate of lime.

Coral Fishes, a name given to several fishes of different

genera, belonging to the *Chætodontidæ*. They are found in all tropical seas, especially about coral reefs, and are all brilliantly colored. The most important is the *Holocanthus imperātor*, the 'emperor of Japan,' which measures about 15 inches in length, and is the most esteemed of all the Indo-Pacific fishes.

Coralline (kor'al-In), a term popularly applied both to seaweed with rigid, calcareous fronds and to many of the zoöphytes.

Coralline, an orange-red color, prepared by the action of ammonia at about 300° Fahr. upon rosolic acid, or upon the washed residue of the action of a mixture of sulphuric, oxalic, and carbolic acids. It is used for dyeing silk, and is also printed upon cotton.

Coral Rag, in geology, the highest member of the middle Oölitic series—a variety of limestone containing an abundance of petrified corals, occurring in some parts of England.

Coral Root. See *Dentaria.*

Coral Sea, part of the Pacific on the northeast of Australia, between it and the Solomon Islands and the New Hebrides.

Coral Snake, a genus of small venomous snakes of the same family as the cobra. The typical species is found in woods and thickets in South America.

Coral-tree, trees and shrubs of the the name of leguminous genus *Erythrina*, natives of Africa and America, with trifoliate leaves and beautiful scarlet spikes of papilionaceous flowers.

Coranach. See *Coronach.*

Cor Anglais (kor-äŋ-glā; French, 'English horn'), a wind instrument of the reed kind, similar to the oboe, and possessing a compass of like extent, but of lower pitch. Its compass is from F fourth line in the bass to B flat above the treble staff.

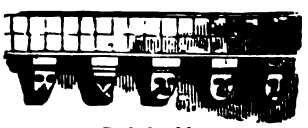
Coraopolis (kor-a-op'o-lis), a borough of Allegheny Co., Pennsylvania, 10 miles N. W. of Pittsburgh, in a gas and oil field. It has steel and glass plants. Pop. (1920) 6162.

Corato (kō-rā'tō), a town of S. Italy; province Bari. Pop. 41,573.

Corbeil (kor-bāy), a town of France, dep. Seine-et-Oise, where the Essonne enters the Seine; various manufactures. Pop. 9756.

Corbel (kor'bel), in architecture, a piece of stone, wood, or iron projecting from the vertical face of a wall, to support some superincumbent mass. Corbels are of a great variety of forms and are ornamented in many ways. They are sometimes used in rows to support a projecting course called a *corbel-table.*

Corbel, Castor Church, Northamptonshire.



Corbel-table.

Corbie Steps (kor'bi), in architecture, steps into which the sides of gables from the eaves to the apex are broken. They are common in old Scotch architecture, into which they were probably introduced from France.

Corchorus (kor'ko-rus), the genus of plants to which jute belongs, order Tiliaceæ (the lime-tree). They are herbs or small shrubs with serrated leaves and small, yellow flowers. See *Jute.*

Corcoran (kor'kō-ran), WILLIAM WILSON, banker, born in Georgetown, District of Columbia, in 1798. He engaged in the banking business, accumulated a large fortune. Retiring from business in 1854, plans of benevolence engaged him till his death in 1889. His charities are estimated to exceed $5,000,000. He founded the Corcoran Art Gallery at Washington, a beautiful white marble temple containing splendid oil paintings.

Cordage (kor'dāj), this word signifies all sizes of twine and rope in its comprehensive sense, though in stricter usage it is confined to ropes and cables from half an inch diameter upwards. The materials used in making cordage are hemp, flax, manila, jute, and other plant fibers.

Corday D'Armans (kor-dā-dā r-mäŋ), MARIE ANNE CHARLOTTE, commonly called Charlotte Corday, was born in Normandy in 1768, of a family which counted the poet Corneille among its ancestors. Her lover, an officer in the garrison of Caen, was accused by Marat as a con-

spirator against the republic, and assassinated by villains hired for that purpose. This, as well as a deep-rooted hatred against all oppressors, determined Charlotte Corday to free her country from Marat. Having obtained an interview with Marat at his own house, she plunged her dagger into his bosom, and gave herself up to the attendants, who rushed in at his cries. When tried for murder before the revolutionary tribunals, her air was dignified and her replies firm. In spite of the fervid eloquence of her advocate's defense, she was condemned to the guillotine, and was executed on July 17, 1793.

Cordele (kor-dēl'), a city, county seat of Crisp Co., Georgia, 65 miles S. of Macon, in a timber and farming district. It has manufactures of cottonseed oil, fertilizer, lumber, etc. Pop. (1920) 6538.

Cordeliers (kor'de-lērz), originally an order of Franciscan monks who wore as part of their dress a girdle of knotted cords; afterwards the name given to a society of Jacobins, to which the names of Marat, Danton and Camille Desmoulins gave some reputation. The club lasted from 1792 to 1794, and took its name from their place of meeting.

Cord-grass, *Spartina stricta*, a British grass, very tough, and usd for making ropes.

Cordiceps (kor'di-seps), a genus of fungi, some of which are found on dead leaves and branches, while others are remarkable for growing on the larvæ of insects, which they latterly kill.

Cordilleras (kor-dil-yā'rāz), a Spanish name given to the great chains of the Andes and of Mexico.

Cordite (kor'dīt), an explosive composed of guncotton, nitroglycerin and mineral jelly. While in a plastic state it is pressed through a die in the form of a cord and wound upon reels to dry. Various thicknesses are made to suit different sized guns. Its two explosive ingredients, which separately are dangerous to handle, are almost harmless when combined.

Cordon (kor'don), in a military sense, troops so disposed as to present an uninterrupted line of communication, so as to preserve an area either from hostile invasion or from contagious diseases. In the latter sense it is called *a sanitary cordon*.

Cordova (kor-dō-va), an ancient Spanish city on the Guadalquivir, in Andalusia, capital of a province of the same name. A part of the town is of Roman, a part of Moorish origin; the street are narrow, crooked and dirty; the principal square, however, is distinguished for its size and the beauty of its colonnade. The cathedral is a splendid building, originally a mosque, erected in the eighth century by King Abderahman. The town is well supplied with schools, hospitals, and other institutions. It has always carried on considerable trade; and under the Moors the leather exclusively manufactured there (cordovan) was exported in all directions. Cordova, which was founded by the Romans, became the capital of Arabian Spain and the center of Arabian splendor and science under the Caliphs of the West. At that time it is said to have had a population of 1,000,000. With the decay of the Moorish empire it fell into the hands of Ferdinand III of Castile. Pop. 72,870.

Cordova, or CORDOBA, the capital of the province of Cordova, Argentine Republic, on a tributary of the Parana, about 400 miles N. W. of Buenos Ayres. It occupies a beautiful site in the valley of the Primero, is well built and has many interesting buildings, including a university founded by Jesuits in 1613; observatory, library, etc. Pop. 156,000.—The province, which has copper, lead and gold deposits, has an area of 66,912 square miles, and a population of 765,000.

Cor'dovan, a fine leather which took its name from the city of Cordova, where it was manufactured in large quantities. Much is now made in Northern Africa and the Levant.

Corduroy (kor'dō-roi), a thick cotton stuff corded or ribbed on the surface.—*Corduroy road*, in the United States, a road constructed with logs laid together over swamps or marshy places for carriages to pass over.

Cord-wood, wood cut and piled for sale by the cord, in distinction from long wood; properly, wood cut to the length of 4 feet; but in this respect the practice is not uniform.

Corea, or KOREA (ko-rē'a), a former kingdom of Asia, consisting chiefly of a peninsula lying northeast of China, bounded N. by Manchuria, E. by the Sea of Japan, S. by a narrow sea which parts it from the Japanese Islands, and W. by the Yellow Sea. It is called by the natives Tsiotsien (Cho-sen), and by the Japanese Korai, whence its European name. Pop. vaguely estimated at 8,000,000 to 15,000,000; area about 80,000 square miles. Söul, or Seoul, is the capital. The peninsula is traversed through its length by a mountain range, abrupt and precipitous on the east, but

forming a gentle slope on the west side, which, being watered by the principal rivers of the country, is exceedingly fertile. In the north the only grain that can be grown is barley; but in the south, wheat, cotton, rice, millet and hemp are grown extensively. The ginseng root is a production greatly valued in China and Japan. The domestic animals are oxen, pigs, goats, dogs and

Korean Hats.

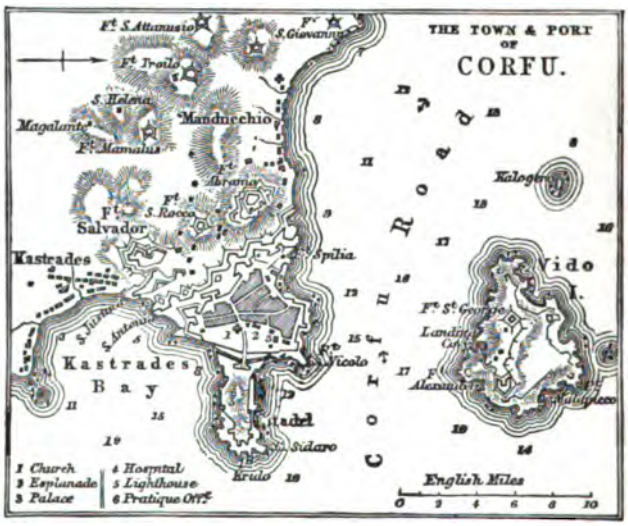
cats, and a small race of horses. Oxen only are used for agricultural labors, the horse being reserved expressly for the saddle. Tigers, panthers, foxes, wolves and sables are abundant. The manufactures are, generally speaking, rude, and mostly confined to tissues of hemp and cotton, silk, paper and pottery. The peninsula abounds in minerals, gold, silver, iron, copper, lead and coal, and the natives show much artistic skill in the art of working metals.

The early records of Corea carry us back to 1122 B.C. Within recent years, while practically independent, it has been tributary to China, while Japan claimed rights there arising from ancient conquests. These conflicting claims led to war between Japan and China in 1894, the result being that Corea was released from Chinese suzerainty. In her war with Russia, Japan made this country a base of operations, established a protectorate over it, and soon after the close of hostilities practically annexed it in November, 1905, by making the Corean government accede to the protocol of a treaty transferring all diplomatic business from Seoul to Tokio, and setting up a Japanese governor-general's office in the Corean capitol. The annexation was completed in August, 1910, the Corean king being dethroned and the country reduced to the status of a province of Japan. As such it was given its ancient name of Cho-sen ('Land of Morning Calm').

Corelli (ko-rel-ē), MARIE, novelist, of Italian and Scotch (Highland) parentage, born 1864; adopted in infancy by Charles Mackay, the English song-writer. Was educated in a convent in France. With excellent musical ability, she composed an opera when only 13, and later produced several notable melodies. Turning to novelistic composition, a curious psychological experience of her own caused her to write *A Romance of Two Worlds*, in 1886. It attained instant success, and henceforth she devoted herself to literature. *Vendetta, Thelma, Ardath, Soul of Lilith, Sorrows of Satan, Jane*, and many other

works of great popularity were produced. Her works are deeply tinged with mystical and psychical views.

Corfu (kor'fö; anciently *Corcy'ra*), a Greek island in the Mediterranean, the most northerly of the Ionian Islands, at the mouth of the Adriatic, near the coast of Albania, about 40 miles long, and from 15 to 20 wide; square miles, 272. The surface rises at one point to the height of 3000 feet, the scenery is beautiful, the climate pleasant and healthy, the soil fertile. Oranges, citrons, grapes, honey, wax, oil and salt are abundant. A Corinthian colony settled in the island in the eighth century B.C. The Venetians possessed Corfu from 1386 to 1797, the British from 1815 to 1864. Pop. 140,757.—CORFU, the capital, is finely situated on a promontory, which terminates in a huge insulated rock crowned by the citadel; the streets are Italian in style; chief edifices, the cathedral, government palace, and Ionian Academy. There is a good harbor and considerable trade. Pop. 18,581.



Coriander (kor-i-an'dėr; *Coriandrum sativum*), an umbelliferous plant, native of Italy, and cultivated in other parts of Europe. The whole plant has an unpleasant smell, but the fruit, improperly called seed, is very agreeable and aromatic when dry. It is used as a carminative and aromatic in medicine, and as an ingredient in cookery and confectionery.

Coriaria (kor-i-ā'ri-a), a genus of plants, type of a small natural order of polypetalous exogens. *Coriaria myrtifolia* is a shrub inhabiting the south of Europe and employed by dyers for staining black, and also used in tanning, and hence called tanner's sumach.

Corigliano (ko-rēl-yē-ā'nō), a town of South Italy, province of Cosenza, on a hill above the right bank of the Corigliano, near the site of the ancient Sybaris, of which no vestiges remain. Pop. 13,272.

Coringa (kō-rin'ga), a seaport in Hindustan, in the Godavari District, presidency of Madras. It had once a great trade. Pop. 4397.

Corinna (kō-rin'a), an ancient Greek poetess of Tanagra, in Bœotia, contemporary with Pindar (about 500 B.C.), whom she is said to have conquered five times at musical contests. Only a few fragments of her songs have come down to us.

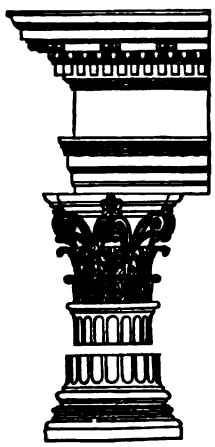
Corinth (kor'inth) a once celebrated city upon the isthmus of the same name which unites Peloponnesus with Northern Greece. It was renowned among the cities of Greece, commanded by its advantageous position a most important transit trade, and possessed all the splendor which wealth and luxury could create, while its citadel, the Acrocorinthus, nearly 2000 feet high, rendered it a strong fortress. Only a few ruins remain to attest its ancient mag-

nificence. It had two harbors, Lechæum on the west side of the isthmus, on what is now the Gulf of Corinth or Lepanto, and Cenchreæ, on the Gulf of Athens or Ægina (anc. *Saronic Gulf*). Near Corinth were held the Isthmian games. Besides being one of the most magnificent, it was also one of the most voluptuous cities of Greece. After many political vicissitudes Corinth became the head of the Achæan League, and was conquered and destroyed by the Roman consul Mummius, 146 B.C. Julius Cæsar, about a hundred years later, rebuilt it; but its commerce could not be restored, though it became a place of note and importance. St. Paul lived here a year and a half, and two of his epistles are addressed to the Corinthians (see below).—*New Corinth* is a village on the shore of the gulf, several miles N. W. from the site of ancient Corinth; it is the seat of an archbishop. Pop. 4300.

Corinth, GULF OF, or GULF OF LEPANTO, a beautiful inlet of the Mediterranean, about 80 miles long, between the Peloponnesus and Northern Greece.

Corinth, ISTHMUS OF, the isthmus which connects the Morea (Peloponnesus) with Northern Greece, varying in width from 4 to 8 miles. A canal, begun in 1882 and about 4 miles long, was opened on August 6, 1893, across the isthmus, and now enables vessels to sail from the Archipelago to the Adriatic without rounding Cape Matapan.

Corinthian Order (kō-rin'thi-an), that order of Grecian architecture of which the most characteristic feature is the capital of the column, which is adorned with beautifully carved acanthus leaves, but varies considerably in minor details. The column is generally fluted, with a fillet between the flutings, and stands upon a base. The entablature is variously decorated, especially the cornice; the frieze may be quite plain, or sculptured with foliage and animals. The Corinthian order was not very common in Greece before the time of Alexander the Great; among the Romans it was much employed.



Corinthian Order.

Corinthians, EPISTLES TO THE, two epistles addressed to the church at Corinth about A.D. 57 or 58, which have been admitted as genuine writings of St. Paul by even the most critical assailants of the New Testament canon. They are most instructive from the insight which they furnish into the character of St. Paul himself, and the constitution, parties, and heresies of the apostolic church.

Coriolanus (kō-ri-o-lā'nus), the name given to an ancient Roman, Caius, or more properly Cneius, Marcius, because the city of Coriŏli, the capital of the kingdom of the Volsci, was taken almost solely by his exertions. He was subsequently banished for seeking to deprive the plebeians of their hard-earned privileges, and in particular of the tribuneship; and seeking revenge he took refuge among the Volsci, the bitterest enemies of Rome, and prevailed upon them to go to war with her. The Volscian army, after making itself master of the cities of Latium, was pitched in sight of Rome before troops could be raised for the defense. The Roman senate made unavailing overtures for peace, till at length the tears of Veturia his mother, and Volumnia his wife, when they appeared at the head of the Roman matrons, induced Coriolanus to withdraw his army from before Rome. He was afterwards assassinated in a tumult while attempting to justify his conduct. The story of Coriolanus, which is now regarded as legendary, forms the subject of one of Shakespere's plays.

Cork (kork), a city in the south of Ireland, capital of the county of Cork, situated on the river Lee. It is 15 miles from the sea, and besides an upper harbor at the city itself, and quays extending over four miles in length, there is a lower harbor at Queenstown, 11 miles below the town. The entrance, deep and narrow, is strongly fortified on each side. Cork is the third city in Ireland, and exports great quantities of grain, butter, bacon, hams, eggs and live stock. The principal industries are tanning, distilling, brewing, and the making of tweeds and friezes. There are also iron foundries and yards for the building of iron ships. The principal buildings are the Protestant and Roman Catholic cathedrals, exchange, custom-house, chamber of commerce, courthouse, Queen's College, etc. There is a naval dockyard at Haulbowline, an island within Cork harbor. Pop.

76,122.—The COUNTY is the most southerly and the largest in Ireland, having an area of 2890 square miles, of which less than a fourth is under crops. The west part is mountainous, the north and east very fertile. The coast is indented with numerous bays and inlets, of which the more important are Bantry Bay, Kinsale and Cork harbors. The climate is remarkably mild, though moist. The county is watered by the Bandon, Lee and Blackwater. Cattle, sheep, pigs and quantities of butter are exported. The fisheries are important. The county has seven political divisions, each sending a member to Parliament. The county town is Cork; other towns are Queenstown, Fermey, Youghal, Bandon, Mallow and Kinsale. Pop. 404,611.

Cork, is the external bark of a species of oak (*Quercus suber*) which grows in Spain, Portugal and other southern parts of Europe and in the north of Africa, and is distinguished by the great thickness and sponginess of its bark, and by the leaves being evergreen, oblong, somewhat oval, downy underneath, and waved. The outer bark falls off of itself if let alone, but for commercial purposes it is stripped off when judged sufficiently matured, this being when the tree has reached the age of from fifteen to thirty years. In the course of eight or nine years, or even less, the same tree will yield another supply of cork of better quality, and the removal of this outer bark is said to be beneficial, the trees thus stripped reaching the age of 150 years or more. The bark is removed by a kind of ax, parallel cuts being carried round the tree transversely and united by others in a longitudinal direction, so as to produce oblong sheets of bark. Care must be taken not to cut into the inner bark, or the tree would be killed. The pieces of cork are flattened out by heat or by weights, and are slightly charred on the surface to close the pores. Cork is light, impervious to water, and by pressure can be greatly reduced in bulk, returning again to its original size. These qualities render it peculiarly serviceable for the stopping of vessels of different kinds, for floats, buoys, swimming-belts or jackets, artificial limbs, etc. Corks for bottles are cut either by hand or by means of a machine. The best corks are cut across the grain.

Cork, EARL OF. See *Boyle.*

Cork, FOSSIL, a kind of mineral, a species of asbestos.

Corking-pin, a pin of a large size, formerly used for fixing a lady's head-dress.

Corleone (kor-lā-ō'nā), a town of Sicily, 22 miles south of Palermo. Pop. 14,803.

Corliss (kor'lis), GEORGE HENRY, inventor, was born in Easton, New York, in 1817. The construction of stationary steam engines has been revolutionized by his improvements, he having invented many ingenious devices. A single engine made by him moved all the machinery in the Centennial Exhibition of 1876. He died in 1888.

Corm (korm), the dilated basis of the stem in monocotyledonous plants, which intervenes between the roots and the first buds, and forms the reproductive portion of the stem of such plants. It differs from a bulb in being solid and from a tuber in its oval figure. Examples are the so-called 'root' of the arum and that of the crocus.

Cormorant (kor'mō-rant) from French, *cormoran*, I. *corvus marinus*, a sea-crow), the name of several large web-footed birds of the pelican family, or forming a family by themselves. They have a longish and strongly-hooked bill, long neck, short wings, and rather long, rounded tail; all

Harris' Cormorant (*Nauopterum Harrisi*).

the toes are united by a web, and, though excellent swimmers, they are able to perch on trees; color generally black or

A CORN HARVESTER AT WORK

The machine cuts the corn, ties it in bundles and deposits the bundles in the wagon which accompanies it.

dark. The common cormorant of Europe (*Phalacrocŏrax carbo*) is larger than a goose, but with smaller wings. It occupies cliffs by the sea, feeds on fish, and is extremely voracious. It dives and swims with great power, and pursues its prey beneath the surface of the water, often to a great depth. Among the Chinese cormorants have long been trained to fish for man. At first a ring is placed on the lower part of the bird's neck to prevent it swallowing the prey, and in time it learns to deliver the fish to its master without such a precaution being necessary. Another European cormorant is the green cormorant or shag (*P. graculus*). It is smaller than the common cormorant. Both these species are found on the eastern coasts of America. Great numbers of common cormorants breed on the Labrador coast. In winter it occasionally comes to New Jersey. The double-crested cormorant, commonly called shag, inhabits the whole of North America, both interior and on the seacoast, in this differing from all other species. Its length is thirty-three inches. The Mexican cormorant inhabits the Southern States and southward. Palla's cormorant is found in Alaska, and is one of the largest of the species. Brandt's cormorant is common to the Pacific coast. The violet-green cormorant is also a Pacific coast bird, reaching to California. Its length is twenty-eight inches. A variety called Florida cormorant, as well as the white-crested, Baird's and red-faced, are enumerated as North American birds. They are surprisingly active under water and have a proverbial reputation for voracity.

Cormus (kor'mus). See *Bulb*.

Corn (Fr. *corne*, L. *cornu*, a horn), a hardened portion of the cuticle of the foot, appearing as a sort of distinct growth, resulting from pressure or rubbing. Corns are generally found on the outside of the toes, but sometimes between them, on the sides of the foot, or even on the ball. They appear at first as small, dark points in the hardened skin, and in this state stimulants or escharotics, as nitrate of silver (lunar caustic), are recommended, but must be used with great care. Perhaps the most efficacious remedy for corns is the application of glacial acetic acid night and morning, or relieving the pressure by means of a small tuft of cotton placed around the corn.

Corn, is the generic term for all kinds of grain used for making bread, and is applied specifically to the principal breadstuff; in England to wheat, in the United States generally to maize, and frequently in Scotland to oats.

Corn (Zea Maize), is the most valuable of our agricultural products. Nearly five-sixths of the world's supply is raised in the United States in some years. In the year 1917, the total recorded was nearly three and one-quarter million bushels. It is also cultivated in Europe, South America and Australia. It needs a richer, heavier soil than wheat and a warmer climate, with long summers and warm nights, and requires from four to five months in which to mature, hence its range in latitude is lower than that of wheat. It is adapted to a wide range of soil conditions. Its longer season of growth than most other stable crops enables it more fully to utilize the plant food rendered available by the processes operating in the soil under favorable conditions of warmth and moisture. As a food crop it is little used in the United States in comparison with wheat, but in countries of Spanish America it is the chief cereal used. The plant is indigenous to America and the knowledge of its cultivation and value is one of the gifts of the Indians to the white man. From this country its cultivation has extended to the southern countries of Europe, and it is largely used for food in Italy and Roumania, as well as in Egypt and India. Its principal consumption in the United States is as feed for hogs and cattle, for which purpose three-fourths of the crop is used. It is used also in industrial products, as whiskey, starch and glucose, which consume about one-fifth of the crop.

The types of corn are dent, flint, sweet, pop, soft and pod, of which only the first four are of noteworthy importance in America, and of these the dent type is the chief, representing nine-tenths of the corn crop in North America in its several hundred varieties. Flint is the second in importance and has a score or more varieties; it is the type most common in Canada, chiefly in Ontario; it is cultivated in the New England States, New York, Pennsylvania and New Jersey; certain varieties of flint corn are grown on the higher elevations. Dent corn is classified according to size and maturity, into early, medium and late maturing varieties, and is further distinguished for color, as yellow, white, white cap yellow and mixed dent varieties. In the eastern section the prevailing varieties are Pride of the North, Early Huron Dent, Funk's Go-Day, Leaming and many strains of white cap dent. The varieties most raised in the corn belt of Ohio, Indiana, Illinois,

Iowa, Missouri and Eastern Kansas and Nebraska are Reed's Yellow, Funk's Yellow, Leaming, Reilley's Favorite, Clarage, Hogues' Yellow, Hildreth's Yellow, Hiawatha Yellow, Boone County White, Johnson County White, Silver Mine, St. Charles White and Kansas Sunflower. In the northern portion of the corn belt, Michigan, Wisconsin, Minnesota, the Dakotas and the northern sections of Illinois and Iowa, the commonest varieties are Silver Pride, Pride of the North, Wisconsin No. 7, Murdock, Wimple's Yellow, Pickett's Yellow and Golden Eagle. In the southern States are the large-eared varieties, Huffman, Excelsior, Chisholm, McManin's Gourdseed, St. Charles' White, Boone County White, Rockdale, Singleton, and Ferguson's Yellow, and the two-eared varieties, Lewis' Prolific, Hickory King and Neal's Paymaster, and among the prolific varieties bearing two or more ears on a stalk are Cocke's, Albemarle, Whatley's, Mosby's, Hastings, Marlborough and Batts'.

The best-known flint varieties include Longfellow, King Philip, Hickney's Yellow, Taylor's Improved and Davis' Eight-Rowed. It is to be noted that the variety best adapted to any locality can be determined only by local tests, the results of which by local farmers' organizations co-operating with State experiment stations has tended greatly to improve, both the selection of varieties and the yield per acre and to emphasize the importance of the selection of the variety that will give the best results in the locality.

More than 70 per cent. of the corn raised in the United States is produced in ten States: Illinois, Iowa, Missouri, Nebraska, Indiana, Kansas, Ohio, Texas, Oklahoma and Kentucky. The greater part of the yield of the United States, over four-fifths, is consumed within the counties in which it is grown, being fed to hogs and cattle, by which use, in the resultant pork and beef, it is worth six times as much as when used for human food. One great drawback to the exportation of corn as human food, at present, is the general ignorance in Europe of its value in this respect, and of how to handle it, nor are there suitable mills for grinding it, and the meal cannot itself be exported in large quantities because it will 'heat' quickly and thus be unfit for food. It is not improbable that under the stress of war the ignorance of its value and the lack of grinding facilities will disappear, and that the day is not far distant when vast quantities of our corn will be shipped to foreign markets to add to the food supply of the people. According to estimates of the International Institute of Agriculture in Rome, Italy, the world crop of production of corn for 1916 was: United States, 2,865,900,000 bushels; Japan, 4,102,000 bushels; Switzerland, 157,000. Total for three countries, 2,870,159,000 bushels.

Corn requires for its highest production warm, deep and loamy soils with plenty of moisture. The critical period in the great corn belt is during July and August, during which the rainfall determines largely the season's yield; it is found that between the average yield of corn and the July rains there is a close correlation. Poor land is not suitable for corn, the growth of stalk requiring abundant plant food. Nor can it be grown continuously without diminishing yields on the same soil, no matter what manure or fertilizer is applied. A rotation of crops is essential to the maintenance of good yield. From four to seven years are the periods of rotation usual, but in the rotation at least one leguminous crop should be planted, but the crops for rotation vary according to their value in different sections. Corn succeeds best on sod land. Plowing for corn is done either in fall, winter or spring, in many sections preferably in the fall. Deep plowing has great advantages and disking and harrowing are of the highest importance to secure a loose and friable soil. The character and quantity of fertilizer best adapted depend on the nature and condition of the soil and other considerations, but stable manure is particularly valuable, second to which is a complete fertilizer having phosphoric acid as its chief ingredient. Phosphorus added to the stable manure also promotes an increased yield. Planting should not be done till the soil is warm enough to germinate the seed quickly, the time varying in different localities. A wet cold soil will rot the seed. It may in general be said that when the leaves of the oak are the size of a squirrel's ear in any locality, that is the best time to plant corn, but it is better to plant too early than too late. When later planting is necessary early maturing corn is frequently planted. For grain raising 10,000 to 12,000 plants per acre produce the best stand in the great corn belt. The better the soil the greater the number of plants that can be supported. Small varieties may be more thickly planted, so may corn grown for fodder or ensilage, when the number of plants may be increased twenty-five per cent. Whether hill or drill planting is done, the rows are usually 40 inches apart, except in poorer soil, when 44 inches is better. Drilling is easier and is preferable unless there are many weeds. Where weeds are very numerous, better

results follow check-rowing, which admits of more thorough cultivation. In growing for grain three kernels to the hill yield, perhaps, the best results, generally. Where the rainfall is abundant corn is frequently planted in furrows, with a lister, a double mold-board plow that simultaneously cuts a deep furrow, plants the kernel, and covers it with earth. In loose soils the grain is planted from 3 to 4 inches deep, according to surface moisture, and on wet, heavy soils, 1½ to 2 inches. The kernels should be regular in shape and if necessary, should be assorted in sizes so that the planter plates may be adjusted to pass the different sizes. This result may be obtained by using a seed-corn grader.

Corn requires careful cultivation to destroy weeds, to conserve and to facilitate the absorption of moisture and to aerate the soil. Deeper rooting of the plant is induced by deep cultivating which should not be repeated after the first cultivation, as injury to the plant roots is unavoidable. For the first or deep cultivation, from four to five inches is general; the later shallow cultivation is generally one to two inches deep. Cultivating is governed by the weed growth and the state of the soil surface.

In the great corn belt the corn is in large part harvested direct from the standing stalks, leaving the latter to waste, except it is pastured. In other sections the whole plant is harvested, three to four hundred are cut and put in shocks to cure properly, after which it is husked, in from three to six weeks after cutting, and the stacks reshocked to be removed to the barns, or stacked in rows as early as convenient, when sufficiently dry, for feeding during the winter. Shredding or chopping the stalks is economical, as the greater portion of the feeding value is thus utilized.

In storing corn it is desirable, after curing, to leave it in the ear for a time in a well-ventilated crib, protected from rats and mice. Corn shrinks considerably after storing in the crib, especially during the first month, a fact that bears importantly on the question of holding for market rises. Under an Act of Congress corn is classified into six grades, Nos. 1-6, according to the percentage of moisture, damaged kernels, foreign material, broken and cracked corn. Corn is the most valuable of the great feeding crops. Its selection and breeding is of great importance, and careful labor in this way has secured largely increased yields of grain and varieties. The farm value of the corn crop of the United States for 1917 was over four billion dollars, out of a gross farm output of twenty-one billions. See *Ensilage*.

Cornaceæ (kor-na'se-ē), a natural order of polypetalous exogens, consisting of about 100 species, one of them being the common European dogwood. Several plants of this order are of service as tonics and for the cure of ague, and in America the bark of the *Cornus florida*, is sometimes used as a substitute for Peruvian bark. See also *Cornel*.

Corn Aphides, aphides infesting the ears of corn, barley, oats and other grain, and sucking their juices, as the *Aphis granaria*, or wheat aphis. See *Aphis*.

Corn-beetle, a minute beetle, the *Cucūjus testacēus*, the larva of which is often very destructive to stores of grain, particularly of wheat, in granaries.

Corn-cockle, a well-known weed (*Agrostemma Githāgo*), nat. order Caryophyllaceæ, with large entire purple flowers, very troublesome among crops of grain. Its seeds are said to be poisonous to poultry, swine, etc.

Corn-crake, or LANDRAIL (*Crex pratensis*), is a species of bird of the order Grallæ or Waders and of the family Rallidæ or rails. The crakes differ from the rails proper (*Rallus*) in having the bill shorter. The common crake of Britain is of a reddish-brown color. It lives in fields and meadows, and nestles and runs among the long grass. The name is expressive of its cry. It feeds on worms and insects.

Cornea (kor'nē-a), the transparent portion of the anterior coat of the eye. This is destitute of blood-vessels, its nutriment being obtained from a system of lymph chambers. It is subject to certain diseased conditions, the most common being inflammation known as *keratitis*. Also ulcer of the cornea is of common occurrence. This results most often from injury, inflammation of the conjunctiva, disturbances in nutrition, etc. Inflammation of other portions of the eye may accompany ulceration and result in adhesion, closure of the pupil and partial or full opacity of the cornea. A protrusion of the cornea, known as *staphyloma*, may follow.

Corneille (kor-nā-yē), PIERRE, the father of French tragedy and classical comedy, was born at Rouen in 1606, at which place his father was advocate-general. He began his dramatic career with comedy, and a series of vigorous dramas, *Mélite* (1629), *Clitandre*, *La Veuve*, *La Suivante*, etc., announced the advent of a dramatist of

a high order. In 1635 he entered the field of tragedy with *Medea;* but it was not till the appearance of his next work, the famous *Cid*, that Corneille's claim to a place among the great tragic poets was recognized. The *Cid* was an imitation of a Spanish drama, and though gravely defective in the improbabilities of the plot and other respects, achieved an immense success by a certain sublimity of sentiment and loftiness of ideal, which are the native characteristics of Corneille's poetry. After the *Cid* there appeared in rapid succession *Horace* (1639); *Cinna* (1639), his masterpiece, according to Voltaire; and *Polyeucte* (1640), works which show Corneille's genius at its best. Many of his later pieces exhibit a marked decline. Besides his dramas he wrote some elegies, sonnets, epistles, etc., as well as three prose essays on dramatic poetry. As a dramatist his merits are loftiness of sentiment and conception, admirably expressed in a bold and heroic style of versification and language. But in this constant straining after a heroic ideal he was apt to fall into a declamatory and inflated style. He died in 1684.

Corneille, THOMAS, brother of the preceding, was born at Rouen in 1625. They had married two sisters, and lived in the same house in the utmost harmony. Thomas began with comedies, which were imitations of the Spanish school, and were received with even greater applause than those of his brother. The first was *Les Engagements du Hasard* (1647). His best tragedy is *Ariane* (1672). He is a dramatist of very secondary rank, laborious and cultivated, but wanting in original power. He died in 1709.

Cornel (kor'nel), or CORNELIAN TREE (*Cornus mascula*) a species of dogwood, a tree or shrub of the order Cornaceæ, distinguished by the hardness of its wood, a native of Asia and the south of Europe, and cultivated as an ornamental plant and for its fruit in the north. One of the finest species, the round-leaved Cornel, *C. circinata*, is an American shrub, 5 to 10 feet high, common from Virginia to Canada. *C. florida*, the American dogwood, is a handsome tree 20 to 30 feet high.

Cornelia (kor-nē'li-a), the daughter of Scipio Africanus the elder, married Tiberius Sempronius Gracchus, censor B.C. 169, by whom she was the mother of the two famous tribunes Tiberius and Caius Gracchus.

Cornelian (kor-nē'li-an), or CARNELIAN, a gem of a light-red or flesh color. It consists of silica along with minute quantities of the oxides of iron, aluminium, and sometimes of other metals, and is used for seals, bracelets, necklaces and other articles.

Cornelius (kor-nē'li-us), PETER VON, a German painter, born at Düsseldorf in 1787; died in 1867. He early exhibited a taste for art, and studied the great masters, especially Raphael. In 1811 he went to Rome, where, in conjunction with Overbeck, Veit and other associates, he may be said to have founded a new school of German art, and revived fresco painting in imitation of Michael Angelo and Raphael. He left Rome in 1819 for Düsseldorf, where he had been appointed director of the academy, but he soon settled in Munch to give his whole attention to the painting of the Glyptothek and the Ludwigskirche there. In these two great works he was assisted by his Munich pupils. In 1833 he made another visit to Rome, and in 1839 he visited Paris. In 1841 he was invited to Berlin by Frederick William IV, who entrusted him with the painting of the royal mausoleum or Campo Santo. The most celebrated cartoon in this series is the *Four Riders of the Apocalypse*. The series consists of twelve paintings, which have been engraved. Cornelius, a true representative of modern German thought, introduced into art a metaphysical and subjective element which is easily liable to be abused; and in his work grandeur of conception and elevation of tone have to make up for the want of the finest natural effects.

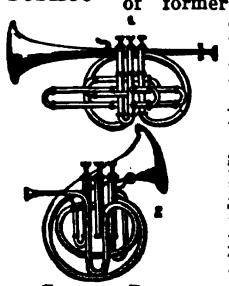
Cornelius Nepos, a Roman author of the first century B.C., the contemporary of Cicero and Catullus. The only extant work attributed to him is a collection of short biographies, probably an abridgment of a work written by Nepos. These biographies have long been a favorite schoolbook, and popular editions of them are very numerous.

Cornell (kor'nel), EZRA, an inventor, born at Westchester Landing, New York, in 1807. He aided Morse in laying the first telegraph line and subsequently acquired great wealth, largely through his connection with the telegraph business. He founded at Ithaca, New York, the university known by his name. Died in 1874.—His son ALONZO B. CORNELL, born at Ithaca, New York, in 1832, engaged in the telegraph business, became a prominent member of the Republican party, was surveyor of the port of New York, 1869-72, was repeatedly chosen Speaker of the New York Assembly, and in 1879 was elected

Governor of the State of New York. Died in 1904.

Cornell University, an educational institution at Ithaca, New York, was established in 1867 with funds furnished from the income of 990,000 acres of public land allotted by congress to the State for this purpose, and with a foundation of $500,000 presented by Ezra Cornell. This has been much augmented by subsequent donations. There are five general courses, including classics, literature and philosophy, science, engineering, architecture, agriculture, etc. The medical school is in New York City. Women are admitted on the same terms as men.

Cornet (kor'net), a wind-instrument of former times, originally curvilinear or serpentine in form and increasing in diameter from the mouthpiece to the lower end. The modern *cornet-à-pistons*, or cornopean, is a kind of keyed bugle which has a very agreeable tone, and is much used in orchestras and military bands. Several forms of it are in use.



Cornet-à-Pistons. 1, Ordinary-shape. 2, Circular shape.

Cornet, formerly the lowest rank of commissioned officer in a regiment of cavalry in the British army, corresponding with the rank of ensign in the infantry. In 1871 this rank was abolished, that of sublieutenant taking its place.

Corneto (kor-nā'tō), a cathedral town of Italy, province Rome, on a lofty and precipitous volcanic ridge, 10 miles north of Civita Vecchia. Its old walls and its palaces and other edifices present a picturesque appearance. The ancient Tarquinii stood about a mile from Corneto; from the tombs in its necropolis a vast variety of Etruscan relics have been obtained. Pop. 5440.

Corn-fly, a name common to several insects of the family Muscidæ, from the injury their larvæ inflict on growing crops.

Corn-husking, Corn-shucking, an assemblage, in former times, of friends and neighbors at the house of an American farmer to assist him in stripping the husks or shucks from his Indian corn.

Corning (korn'ing), a city of Steuben Co., New York, on the Chemung River, 12 miles N. W. of Elmira, on the Erie, the Lackawanna and the New York Central railroads. It has the world's largest glass-manufacturing plant, large cut-glass concerns, foundries, railroad car shops, and manufactures of iron and clay products, candy, gloves, etc. Coal mines are in the vicinity, and there is a large trade in lumber, dairy products, etc. Pop. (1910) 13,730; (1920) 15,820.

Cornish (kor'nish) Engine, a single-acting steam engine of the 'beam' type (see *Steam Engine*), used commonly for pumping.

Cornish Language, a Celtic dialect spoken in Cornwall, which died out in the eighteenth century, though isolated words or terms are still in use, and some fragments of literature are still extant. It is allied to the Welsh and Breton. See *Celts*.

Corn Laws, a name commonly given to certain statutes passed to protect the agricultural interests in Britain. The first form of interference by legislative enactment with the corn trade in England, beginning soon after the conquest, was the prohibition of exportation, an expedient in those times to prevent scarcity in a sudden emergency. The exportation of grain was prohibited in the reign of Edward III in 1360-61. Calais and other appointed ports being excepted. This provision was relaxed by a statute of Richard II in 1394, by which exportation was permitted from all ports not excepted by royal proclamation. In 1436, under Henry VI, the exportation of grain was permitted without license whenever the price of wheat did not exceed 6*s*. 8*d*. per quarter, and barley 3*s*. 4*d*. In 1463 a statute of Edward IV prohibited importation until the price exceeded the limit at which exportation was permitted. This was the beginning of protection, properly so called. At the restoration of Charles II duties were imposed both on exportation and importation, while the old principle of a standard price, beyond which exportation was prohibited, was retained. At the Revolution a new policy still more favorable to the agricultural interest was adopted.

By a statute of William and Mary, a bounty was granted on the exportation of corn, and the duties on exportation were abolished. The amount of the bounty was 5*s*. for every quarter of wheat exported while the price was at or under 48*s*., with corresponding prices for other grains. The exportation of grain reached its highest point about 1750. From this period the country, which had always been normally a grain-exporting country, began, on account of

the increase of population and expansion of mechanical industries, to fall off in this respect, and in 1778 became permanently a grain-importing country. From this time the main efforts of the agricultural interest, largely represented in the Parliament and the ruling classes of the kingdom, were concentrated on obtaining the imposition of prohibitory duties on foreign grain. In 1804, for instance, in case the price of corn was below 63*s.* a prohibitory duty of 24*s.* 3*d.* was to be laid on what was imported; if between 63*s.* and 66*s.*, a duty of 2*s.* 6*d.*; and only when the price had risen as high as 66*s.* per quarter was the foreign grain allowed to pass at a nominal duty of 6*d.* With variations of more or less importance this sliding scale of prohibitory duties continued in force till 1846, when Sir Robert Peel, influenced by the corn law repeal agitation, and more especially by the Anti-Corn Law League, headed by Cobden and Bright, carried a measure repealing the duty on imported corn, except a nominal sum of 1*s.* per quarter, which also in 1869 was done away with, thus leaving the importation of corn entirely free.

Corn Marigold (*Chrysanthĕmum segĕtum*), a common weed in British cornfields, of a rich orange color.

Corn-moth, a small moth, the *Tinĕa granella*, the larva of which is exceedingly destructive to corn sheaves in the field, and to stored grain, from eating into the grains. Salt, frequent turning, and many expedients are employed to destroy the eggs.

Corno, Monte. See *Gran Sasso.*

Corn Salad, *Valerianella olitoria* and other species of the same genus, order Valerianaceæ, is extremely easy of cultivation, and can be obtained in the very first days of spring. *V. olitoria*, called also lamb's lettuce, is a weak, succulent herb 6 to 12 inches high, used as a salad in early spring.

Corn Sawfly (*Cephus pygmæus*), an insect the larvæ of which prey upon wheat and other cereals. The female deposits her eggs in the stalk, where the larvæ live upon the interior of the straw and the nutritive juices of the plant.

Corn-thrips, a minute species of thrips, the *Thrips cerealium*, which does much mischief to grain crops, insinuating itself between the chaff and the unripe seed, and causing the latter to shrivel by sucking the juice. It is barely a line long.

Cornucopia (kor-nū-kō'pi-a; *L. Cornu Copiæ*, 'horn of plenty'), a wreathed horn filled to overflowing with fruit, flowers and grain; used as the symbol of plenty.

Cornus (kor'nus), a genus of plants, of the nat. order Cornaceæ (which see).

Cornwall (korn'wal), a maritime county of England, forming the southwestern extremity of the island, bounded E. by Devonshire, and surrounded on all other sides by the sea; area, 1350 sq. miles or 868,167 acres. The coastline is much broken. Between the north and south coasts is the promontory of Land's End, terminating in granite cliffs about 60 feet high. Some of the other cliffs exceed 400 ft. in height. At Land's End terminate the hills of the Devonian Range, their highest summit in Cornwall being Brown Willy, 1368 feet. Granite and old red sandstone are the chief rocks. The rivers are numerous, but short. Much of the area, especially in the elevated districts, is barren moorland. About a fifth is under the plow. The chief wealth of the county is in its minerals, especially its mines of copper and tin, though the value of both has diminished. Several mines exceed 350 fathoms in depth. In the Botallack copper mine, a few miles north of Land's End, the workings are carried below the sea. In addition to tin and copper there are, in comparatively small quantities, silver, lead, zinc, iron, manganese, antimony, cobalt and bismuth. There are also valuable deposits of kaolin or china-clay. There are no manufactures, but the fisheries, particularly of pilchard and mackerel, are valuable. Cornwall, with the Scilly Isles, seems to have been the Cassiterides or Tin Islands of antiquity. The natives long maintained their independence against the Saxons, and their country was spoken of as West Wales. Their language also long continued to be Celtic. (See *Cornish Language.*) The chief towns are Bodmin (county town), Penzance, Truro and Falmouth (with Penryn). The county gives the title Duke of Cornwall to the eldest son of the sovereign of Great Britain, and forms a royal duchy, the revenues of which belong to the Prince of Wales for the time being. The dukedom was created for the Black Prince in 1337. Pop. (1911) 328,131.

Cornwall, a port and manufacturing town of Canada, province Ontario, on the north side of the St Lawrence, 67 miles above Montreal. Pop 6598.

Cornwallis (korn'wal-is), CHARLES, MARQUIS OF, son of the first Earl Cornwallis, born in 1738. Educated at Eton and Cambridge, he served in 1761 as an aide-de-camp in the Seven Years' war; was made colonel of foot in 1766, and finally general. On the outbreak of the American war he sailed with his regiment, served with distinction under Howe and Clinton, and in 1780 was left in independent command in South Carolina with 1000 men. He defeated Gen. Gates at Camden, 1780, and fought Gen. Greene at Guilford in 1781, but six months afterwards was besieged in Yorktown and compelled to surrender, October 17, 1781. This disaster brought an end to the war. In 1786 Lord Cornwallis went to India with the double appointment of commander-in-chief and governor-general, invaded Mysore in 1791, and obliged Tippoo Saib to surrender much territory. Having returned to Britain, he was created a marquis (1794), appointed lord-lieutenant of Ireland, and again in 1805 governor-general of India. He died the following year.

Lord Cornwallis.

Corn-weevil (-wē'vl), a destructive insect which preys upon stored corn. There are various species: order Coleoptera, family Curculionidæ, genus *Calandra*. The *Calandra granaria* is a slender beetle of a dark-chestnut color about one-eighth of an inch long. It bores a hole and deposits its egg inside of the grain, which is afterwards eaten to the husk by the grub.

Coro (kō'ro), a seaport town of Venezuela, at one time a flourishing place, but now much decayed. Pop. 9500.

Corocore (kor'a-kōr), a boat of the Indian Archipelago of various forms. That used in Celebes is propelled by oars, and is often manned with sixty men. Others, as those used in the Moluccas, are masted vessels.

Corody, CORRODY (kor'o-di), an allowance of meat, drink or clothing, anciently due to the king from an abbey or other religious house, for the sustenance of such of his servants as he thought good to place there for maintenance. Corodies were also retained by the private founders of religious houses and even granted to benefactors, and consisted in the right of sending a certain number of persons to be boarded at an abbey.

Corolla (kō-rol'a), in botany, the portion of the flower inside the calyx; the inner floral envelope. The corolla surrounds the parts of fructification and is composed of leaves called petals. When there are several free leaves it is called a *polypetalous* corolla, as in the rose; but when the petals are united by the margins into a continuous structure it is called *monopetalous*, or more correctly *gamopetalous*. It may generally be distinguished from the calyx by the fineness of its texture and the gayness of its colors; but there are many exceptions.

a a, Many petaled or leaved Corollas. *b b*, Single petaled or leaved Corollas.

Corollary (kor'o-la-ri; in Latin *corollarium*), in mathematics, a collateral conclusion, following from a proposition demonstrated.

Corollifloræ (kor-ol-i-flō'rē), one of the great subdivisions of exogenous plants, distinguished by the corolla being gamopetalous, inserted below the ovary, and by the stamens being inserted on the corolla. The primrose, health, gentian, verbena, etc., are included in this division.

Coromandel Coast (kor-ō-man'del; *Cholomandala*), the east coast of the Indian Peninsula, Madras Presidency, or that portion of it between Palk Strait and the river Pennar. It is open, sandy, and has no secure harbors, and the surf renders landing difficult and often impossible except to the native catamaran.

Coromandel Wood, the wood of *Diospyros hirsuta*, a tree found in Ceylon. Its ground color is chocolate brown, with black stripes and marks; it is hard, turns well, and makes very handsome furniture.

Corona (kō-rō'na; L. 'a crown')—(1) In astronomy, a halo or luminous circle round one of the heavenly bodies; specifically the portion of the aureola observed during total eclipses of the sun, which lies outside the chromosphere or region of colored prominences. It is supposed to be an outer portion of the solar atmosphere of exceeding rarity. (2) In botany, an appendage of the corolla in some flowers, coming, as it were, between the corolla and the stamens, well seen in the cup of the daffodil. (3) In architecture, the lower member of the projecting part of a cornice.

Coro'na Austra'lis (the 'southern crown'), one of Ptolemy's southern constellations, containing twelve stars.

Coro'na Borea'lis (the 'northern crown'), one of Ptolemy's northern constellations, containing twenty-one stars.

Coronach (kor'ō-nah), or CORANACH, a dirge or lamentation for the dead formerly customary among the Celts of Scotland and Ireland.

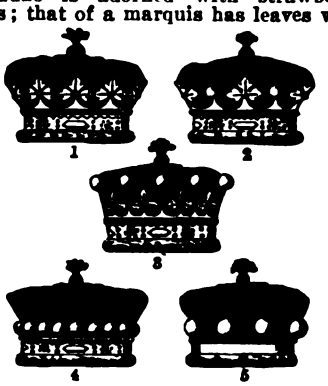
Coronado (kor-o-nä'do), VASQUEZ DE, a Spanish explorer, born at Salamanca, about 1510. He went to Mexico and in 1540 was put in command of an expedition to the north, with the hope of discovering and conquering a rich kingdom in that direction. Coronado went as far north as Kansas, but failed in all his hopes and became insane from disappointment, dying about 1542.

Coronation (kor-ō-nā'shun), the placing of the crown on a monarch's head with solemn rites and ceremonies. Part of the ceremony usually consists in the oath which the monarch takes, that he will govern justly, will always consult the real welfare of his people, and will conscientiously observe the fundamental laws of the state. In England kings have been anointed and crowned in Westminster Abbey, even to the latest times, with great splendor. The form of the *coronation oath* settled after the revolution of 1688 remained unchanged until 1910, when it was decided in Parliament to rescind, in the coming coronation of George V, the portion reflecting on the Roman Catholic faith. The Archbishop of Canterbury puts the oath to the sovereign, who swears to govern according to the statutes of Parliament, to cause law and justice in mercy to be executed, and to maintain the Protestant religion.

Coronellidæ (kor-o-nel'i-dē), a widely-spread family of non-venomous serpents. It includes several genera, as *Psammophylax* and *Coronella*. *Coronella lævis*, the smooth snake, is a native of Britain.

Coroner (kor'ō-nėr), an official whose chief duty is to inquire into the cause of the death of persons killed or dying suddenly. The coroner's examination is made in all cases with the aid of a jury, in sight of the body, and at the place where the death happened. If the body is not found he cannot sit. In the United States coroners are elected or appointed. They have no defined responsibility, except in cases of crime, where they can cause arrests.

Coronet (kor'ō-net), such a variety of crown as is worn by princes and noblemen. The coronet of a British duke is adorned with strawberry leaves; that of a marquis has leaves with



CORONETS
1, Of a Duke. 2, Of a Marquis. 3, Of an Earl. 4, Of a Viscount. 5, Of a Baron.

pearls interposed; that of an earl raises the pearls above the leaves; that of a viscount is surrounded with pearls only; that of a baron has only six pearls.

Corot (kō-rō), JEAN-BAPTISTE-CAMILLE, a French artist, born at Paris in 1796; died in 1875; studied under Michallon and Victor Bertin and afterwards in Italy. He exhibited for the first time in the salon in 1827, but some years elapsed before the high qualities of his work were recognized. The fortune which he inherited from his father enabled him, however, to follow out the bent of his

genius, and the last twenty-five years of his life were a continuous triumph. He frequently painted figure subjects, including the large sacred pictures, the *Flight into Egypt* and the *Baptism of Christ;* but his most characteristic and successful work was in landscape. His woodland scenes, painted for the most part at dawn or twilight in a scheme of pale greens and silvery grays, show a singularly subtle feeling for this phase of nature, and are undoubtedly among the most important contributions of the last century to landscape art.

Corozonuts (ko-rō'zō-), the seeds of a tropical American palm, the *Phytelĕphas macrocarpa*, whose hardened albumen, under the name of vegetable ivory, is used for small articles of turnery-ware.

Corporal (kor'pō-ral; French, *caporal*, from L. *caput*, the head, the corporal being formerly a superior officer), a petty officer in the American and British armies ranking just above the ordinary private and below the sergeant. He has charge of one of the squads of the company, places and relieves sentinels, etc.

Corporation (kor-pō-rā'shun), in law, a civil or political body in which are vested certain rights or privileges with a view to their preservation in perpetual succession. A corporation may consist of one person only and his successors, when it is called *sole* (the sovereign of Britain for example); or of a number of persons, when it is called *aggregate*. When a corporation is vested in a single person, that person is looked upon in regard to the rights of the corporation as holding a representative or official position, and these rights belong to and are transmitted by him in virtue of this position, and not as natural rights. In like manner the rights and powers of an aggregate corporation do not consist of the natural rights of the members, but of the rights held and duly exercised by the terms of the corporation. Corporations may be either public or private. An instance of the former is a municipal corporation under the management of the State or the United States government. Private corporations do not fulfill any function of public government. They may be either ecclesiastical or lay. Ecclesiastical corporations are created to enable religious societies to manage with greater facility their temporal concerns. Lay corporations are private corporations not under immediate control of some religious body.

Corporation Tax, a section of the United States tariff law of 1909 providing for the taxation of every corporation, joint-stock company and assurance company organized and doing business in the United States, the tax being one per cent. upon all the net income over $5000. This is a national tax, its proceeds forming a part of the national revenue. In 1910 these were over $26,000,000. The law, as sustained by the Supreme Court, gives the government the right to investigate the books of corporations.

Corps (kōr; French for body), a word often used as a military and a political term.—A *corps d'armée*, or *army corps*, one of the largest divisions of an army.—*Corps diplomatique*, the body of ministers or diplomatic characters.—*Corps législatif* (kōr lā-zhis-lā-tēf), the lower house of the French legislature in 1857-70. Its members were elected for six years in the proportion of 1 to 35,000 electors.

Corpulence (kor'pū-lens), an unwieldy state of the human body due to the excessive deposition of fat. It is promoted by a diet too rich in fat-forming materials, fats, starch and sugars, bodily inactivity, tranquillity of mind, etc. There is, however, a diseased state of the system which, independently of all these influences, will increase the production and deposition of fat. If corpulence is excessive it becomes troublesome and at length dangerous. In curing corpulency due attention must be paid to the regulating of the diet, exercise and sleep of the individual. Especial attention must be given to the kind of diet. Avoid all kinds of fat-forming food, such as fat, cream, butter, sugar, potatoes, farinaceous food and malt liquors, and indeed alcoholic liquors of all kinds. Little bread should be eaten; a moderate increase in animal foods, lean beef, fish, fowl, eggs, is allowed; green vegetables and fresh fruit may be eaten. Regular exercise to suit the person's powers should be engaged in. A noted instance of corpulency is Daniel Lambert, who weighed over 50 stone, or more than 700 lbs. Moderate corpulence may be quite consistent with health.

Corpus Christi (kor'pus kris'ti; 'body of Christ'), the consecrated host at the Lord's Supper, which, according to the doctrines of the Roman Catholic Church, is changed by the act of consecration into the real body of Christ. This doctrine caused the adoration of the consecrated host, and hence the Roman Catholic Church has ordained for the host a particular festival, called the *Corpus Christi feast*. This

was instituted in 1264 by Pope Urban IV by a bull, in which he appointed the Thursday of the week after Trinity Sunday for the celebration of the Corpus Christi festival throughout Christendom.

Corpus Christi, a city, port of entry and county seat of Nueces Co., Texas, on Corpus Christi Bay, 125 miles S. E. of San Antonio. It is a popular health resort and has large cotton and other interests. Pop. (1910) 8222; (1920) 10,522.

Corpuscles (k o r'pus-ls, kor'pus-kls), the minutest particles of substance, such as the electrons supposed to constitute the atom, and the flying particles in the Lesage hypothesis of gravitation. (See next article.) A name also applied to two kinds of minute solid bodies constituting an integral part of blood.

Corpuscular Theory of Light (kor-pus'kū-lar), the theory which explained the phenomena of light by supposing that a luminous body emits excessively minute particles of matter, corpuscules as they were called, which striking the eye produce the sensation of light. Newton held the corpuscular theory, and supported it with great ingenuity. This theory has long been displaced by the *undulatory theory* (which see).

Corpus Juris (kor'pus jū'ris; 'body of law') is a name given to certain collections of laws. The name of Corpus Juris Civilis ('body of civil law') in particular was bestowed in the twelfth century upon the general body of legal works drawn up at the orders of Justinian, viz. the Institutes, Pandects, Code and Novels; together with the collections bearing on the feudal law appended to them. With the canonical or papal laws the same mode of proceeding has been adopted, and the Corpus Juris Canonici compiled.

Corral (kor-al'), a yard or stockade for cattle.

Correction of the Press, the correction of printed matter before publication. The first impression taken from the types is called a *proof*, and almost always contains some errors. In correcting proofs for the printer the following signs are used:—When a wrong word or letter occurs, a line is drawn through it, and the proper word or letter written on the margin opposite. If a clause, word, or letter is omitted, a caret (∧) is marked at the place, and the omission is written on the margin. If a superfluous letter or word occurs, the pen is drawn through it, and the character ⁊, signifying *dele* (delete, or take out), written in the margin. Where words are improperly joined, a caret is written at the place where the separation should be made, and the mark # written in the margin. When syllables or words are improperly separated, they are joined by horizontal parentheses, as du‿ty. These parentheses are to be made in the margin as well as at the break. This sign is also used where there is too much space in one or more parts of a line. A tick-mark (√) also means to lessen space. When words are transposed, they are to be connected by a curved line, as ⌒not is⌒ when set up for 'is not,' and the mark *tr.* (transpose) is to be written in the margin. When a letter is turned, a line is drawn under it, and the mark ⁊, made in the margin. When punctuation is omitted, or requires to be altered, a caret is put at the place, and the comma or period, etc., is placed in the margin, with a stroke behind it, as / . If a mark of quotation or superior letter has been omitted, the caret is made as before, and a mark of this sort ⁊, ⁊ or ⁊ is placed in the margin. Words marked are to be printed in italics are beneath with a single line; as office (*office*), if in small capitals, with two lines, as Greece (GREECE); if in full capitals, with three, as James (JAMES). Where these marks are used in correction, the abbreviations *ital.*, *small caps.*, or *caps*, should be written in the margin. Where a word printed in italics is to be altered to roman letters, a line is to be drawn under it, and the word *rom.* written in the margin. Where a corrector, after altering a word, changes his mind, and prefers to let it stand, dots are placed under the word in the proof, and the word *stet* (let it stand) written in the margin. When two paragraphs are desired to be joined, the end of the one and the beginning of the other paragraph are connected by a curved line ⌒, and the words *run in* written in the margin. Where a new paragraph is desired to be made, the mark ¶ is inserted at the place, and the word *par.* written in the margin. The corrections should always be written on the margin of the proof so as to ensure notice by the printer; and when these are numerous or intricate, connect them by a line drawn from the place where they are to be made.

Correggio (kor-rej'ō), ANTONIO ALLEGRI, an Italian painter, born at Correggio, near Modena, in 1494. Little is known of his life, which was very retired. Almost the only anecdote told of him is that on seing the St. Cecilia of Raphael he exclaimed 'Anch 'io son pittore' (I also am a painter), but this is doubtful. Correggio is unrivaled in chiaroscuro and in the grace and rounding of his figures. Among his best pictures are *Night*, in which the chief light is the glory beaming from the infant Saviour; the *St. Jerome*; the *Marriage of St. Catherine;* several *Madonnas*, one of them (called *La Zingarella, or the Gipsy Girl*) said to represent his wife; the *Penitent Magdalene;* the altar-pieces of St. Francis, St. George and St. Sebastian; *Christ in the Garden of Olives;* the fresco of the *Ascension* in the Church of St. John, Parma; the *Assumption of the Virgin* in the cathedral of the same city; the *Ecce Homo* and *Cupid, Mercury and Venus*, both in the National Gallery, London. He died in 1534.

Correlation of Physical Forces, a term introduced by Mr. Grove to denote what may more properly be called the convertibility of the various forms of energy. The energy, for instance, which a bullet in rapid motion possesses, is converted into heat when it strikes the target, the bullet being then warm to the touch. So heat may again be converted into *kinetic energy*, that is, the form of energy possessed by a moving body; for instance, through the intermediation of a steam engine. Heat is also directly converted into electricity, and electricity into heat. In connection with this doctrine that of the conservation of energy ought also to be studied.

Corrèze (kor-rāz), an inland department of France, formed from part of the former province of Limousin, and deriving its name from the river Corrèze, by which it is traversed; area, 2273 square miles; capital, Tulle. It belongs almost entirely to the basin of the Garonne. Except in a few valleys the soil is far from fertile, heaths occupying a great extent of surface, and agriculture being in a very backward state. Pop. 317,180.

Corrib, LOUGH (loh kor'ib), a large lake in Ireland, mostly in County Galway, partly also in County Mayo, about 23 miles in length, and varying from 2 to 6 miles in breadth. It receives the drainage of Lough Mask through a subterranean channel, its own waters being carried by Galway River to Galway Bay. It has some fine scenery on its northern and western shores, contains numerous islands, and, next to Lough Neagh, is the largest lake in Ireland.

Corridor (kor'i-dor; Italian and Spanish), in architecture, a gallery or long aisle leading to several chambers at a distance from each other, sometimes wholly enclosed, sometimes open on one side. In fortification, *corridor* signifies the same as *covert-way*.

Corrientes (kor-rē-ān'tās), a town of the Argentine Republic, capital of the province of same name, on the Paraná, near its confluence with the Paraguay, 832 miles N. of Buenos Ayres. It is well placed to serve as an entrepôt of goods between the upper parts of the Paraguay and the Paraná and the seaports on the La Plata. Pop. 30,172. Pop. of province, 299,479.

Corrievrekin. See *Corryvreckan*.

Corrigan (kor'i-gan), MICHAEL AUGUSTINE, archbishop, born at Newark, New Jersey, in 1839; died in 1902. He was graduated at the American College at Rome in 1863, became Roman Catholic bishop of Newark in 1873, was made an archbishop in 1880, and succeeded Cardinal McCloskey as Archbishop of New York in 1885.

Corrobory (kor'o-bo-ri), a dance engaged in by Australian natives in which the performers, with shields in their hands, circle round a fire.

Corrody. See *Corody*.

Corrosives (ko-rō'sivs; Lat. *corrodere*, to eat away), in surgery, substances which eat away whatever part of the body they are applied to; such are glacial acetic acid, burned alum, white precipitate of mercury, red precipitate of mercury, butter of antimony, hydrochloric acid, sulphuric acid, corrosive sublimate, etc.

Corrosive Sublimate, bichloride of mercury ($HgCl_2$), a white, crystalline solid, an acrid poison of great virulence. The stomach-pump and emetics are the surest preventives of its deleterious effects when accidentally swallowed, if used immediately; after a time the corrosive action of the chemical on the stomach may result in rupture thereof if an instrument be inserted or emetic attempted. White of egg is very serviceable in counteracting corrosive action on the stomach. It is a powerful antiseptic.

Corrugated Iron (kor'ū-gā-ted), sheet-iron strengthened by being bent into parallel

furrows. It is largely used for roofing, and when dipped in melted zinc, to give it a thin coating thereof, is commonly known as *galvanized iron.*

Corruption of Blood. See *Attainder.*

Corry (kor'i), a city of Erie Co., Pennsylvania, 37 miles S. E. of Erie, on 3 trunk lines of railroad. It has 50 manufacturing plants; the products include engines, radiators, toys, leather and steel goods, flour, brick, etc. There is here a State Fish Hatchery; also a new State Armory. Coal and iron fields are in the vicinity. Pop. (1920) 7228.

Corsac (kor'sak) or CORSAK (*Vulpes corsac*), a species of yellowish fox or dog found in Central Asia, Siberia and India. It is gregarious, prowls by day, burrows, and lives on birds and eggs.

Corsairs (kor'sārs), the Anglicized form of the term used in the south of Europe to denote those pirates who sailed from Algiers, Tunis, Tripoli, and the ports of Morocco.

Corselet (kors'let). (1) a cuirass or armor to protect the body from injury, worn formerly by pikemen, generally of leather, and pistolproof. (2) The part of a winged insect which answers to the breast of other animals.

Corset (kor'set), a piece of underclothing worn, usually by women, to give shape to the body, consisting of a sort of closely-fitting jacket, usually stiffened by strips of steel, whalebone or other means, and tightened by a lace. The materials of which it is made should be smooth and elastic, and it should be especially fitted for the individual wearer, as no two human figures are precisely alike. It should be remembered, also, that corsets are meant to preserve a good figure, not to make one, and any forcible compression of the shape, especially on young persons, will only end in destroying natural grace of movement and in serious injury to the health.

Corsica (kor'si-ka; French, *Corse*), an island in the Mediterranean, forming the French department of same name. It is separated from the island of Sardinia, on the south, by the Strait of Bonifacio, about 10 miles wide; length, N. to S., 110 miles; breadth, near its center, 53 miles; area, 3377 square miles. The east coast is almost unbroken, but on the west coast a number of deep bays follow in rapid succession. The interior is traversed by a mountain chain, the culminating point of which, according to the latest surveys, is Monte Cinto, 8891 feet high, Monte Rotondo coming next, 8775 feet high. From the east and west side of the chain numerous streams flow to opposite sides of the coast, generally mere torrents. With the exception of some marshy districts on the east coast, the climate is excellent. There are fine forests containing pines, oaks, beeches, chestnuts and cork-trees, and the mountain scenery is splendid. In the plains and numerous valleys the soil is generally fertile; but agriculture is in a backward state. Mules, goats, horses, cattle and sheep, and among wild animals the boar, the fox and the deer are common. There are good fisheries. In minerals Corsica is not rich. The chief exports are wine, brandy, olive-oil, chestnuts, fruit and fish. The chief towns, Ajaccio and Bastia, are connected by railway. The island was first colonized by the Phœnicians, from whom it got the name of Cyrnos. The Romans afterwards gave it that of Corsica. From the Romans it passed to the Goths, and from them to the Saracens, and in the fifteenth century to the Genoese. France had the rights of the Genoese ceded to her, after Paoli had virtually made Corsica independent, and entered on forcible possession of it in 1768. An insurrection in 1794, headed by General Paoli and assisted by the British, for a time restored the island to independence; but in 1796 it again fell under the dominion of France. It is notable as the birthplace of Napoleon. Pop. 288,820.

Corsicana (kor-si-kan'a), a city, county seat of Navarro Co., Texas, in central Texas, in the heart of the black-land belt of the cotton-producing section. It is a cotton-mill center, with three cotton mills. Its oil industry has rapidly increased and there are now 1500 shallow oil wells. There are refineries, oil-well supply factories, brick works, cotton oil mills, etc. Pop. (1910) 9749; (1920) 11,356.

Corsned (kors'ned) in ancient times a piece of bread, consecrated, to be eaten by a suspected criminal. If it was safely swallowed the person was innocent; if it stuck he was guilty.

Corso (kor'sō), an Italian term given to a leading street or fashionable carriage-drive.

Cort, HENRY, the inventor of the processes of puddling and rolling iron, born at Lancaster, England, in 1740. He commenced business at Gosport, Hampshire; erected ironworks, and studied with great success methods of improving the process of manufacturing iron. By the

unfortunate selection of a partner he was involved in a complication of lawsuits, and finally ruined. In 1794, however, he received a pension of £200 a year from the British government. He died in 1800.

Cortelyou (kor'tel-yū), GEORGE BRUCE, cabinet official, was born at New York in 1862; was graduated at the State Normal School, became a law reporter in 1883 and a school principal in 1885. He entered public service in 1889, became successively private secretary to various officials, and was made stenographer to President Cleveland in 1895, assistant secretary to President McKinley in 1898, and secretary in 1900. He was continued in this position by President Roosevelt, and was chosen by him in 1903 as the first secretary of the new department of Commerce and Labor. In 1905 he was appointed Postmaster-General and in 1907 Secretary of the Treasury, thus holding three secretaryships in the Roosevelt cabinets. In 1909 he became president of the Consolidated Gas Company, of New York.

Cortes (kor'tes), the old assembly of the estates in Spain and Portugal. In early times the king was very dependent upon them, especially in the kingdom of Aragon. When the kingdoms of Aragon and Castile were united under Ferdinand and Isabella the crown succeeded in rendering itself more independent of the estates, and in 1538 Charles abolished the assembly of the estates in Castile altogether. Gradually the popular liberties were encroached upon, and the cortes at length were convened only for the purpose of homage or ceremony, or when a question regarding the succession arose. In 1808 Napoleon revived the cortes for his own ends. The present cortes of Spain are composed of a senate and congress equal in authority, and having the power along with the king to make laws. (See *Spain*.) The Portuguese cortes is coeval with the monarchy, and has had a history very similar to that of the Spanish.

Cortez, or CORTES (kor'tās, kor'tez) FERNANDO, or HERNAN, the conqueror of Mexico, was born in 1485 at Medellin, in Estremadura; died near Seville in 1547. He went to the West Indies in 1504, where Velasquez, Governor of Cuba, under whom he had greatly distinguished himself, gave him the command of a fleet, which was sent on a voyage of discovery. Cortez quitted Santiago de Cuba in 1518, with eleven vessels, about 700 Spaniards, eighteen horses and ten small field-pieces. He landed on the shore of the Gulf of Mexico, where he caused his vessels to be burned, in order that his soldiers might have no other resource than their own valor. Having induced the Totonacs and Tlaxcalans to become his allies, he marched towards Mexico, where he was amicably received; but, having seized Montezuma, the Aztec monarch, and treated the people with great cruelty,

Fernando Cortes.

they finally became hostile and attacked the invaders. After a desperate struggle, in which 100,000 Mexicans are said to have perished, the city was taken, and soon after the whole country was subjugated. In 1528 Cortez returned to Spain; but two years after he was again sent out to Mexico, where he remained for ten years, discovering meanwhile the peninsula of California. He returned once more to Spain, where, notwithstanding his great services, he was coldly received and neglected. After taking part in an expedition to Algiers in 1541 he passed the remainder of his days in solitude.

Cortland (kort'land), a city, county seat of Cortland Co., New York, 30 miles S. of Syracuse, on Tioughnioga River. Seat of State normal school. It has manufactures of wire cloth, automobiles, motor trucks, silk, wall paper, corundum wheels, carriage hardware and other products. Pop. (1910) 11,504; (1920) 13,294.

Cortona (kor-tō'na), a city of Italy, 50 miles S.E. of Florence. It is a place of great antiquity, is partly surrounded by cyclopean walls, and has in its museum a great variety of Etruscan and Roman relics. Its cathedral contains fine works of art. Pop. of commune, 29,659.

Cortona (kor-tō'na), PIETRO DI, properly *Pietro Berretini*, a painter and architect, was born at Cortona in 1596; died in 1669. Pope Ur-

ban VIII employed him to decorate a chapel in the church of St. Bibiena, and also to execute the frescoes of the grand salon of the Barberini Palace. Many churches of Rome were decorated by him; and at Florence he adorned the Pitti Palace for the Grand-duke Ferdinand II. His easel pictures, although of less value than his larger works, are held in great estimation. As an architect he did some important work in church restoration.

Coruna (ko-rö'nyȧ). See *Corunna.*

Corundum (ko-run'dum), the earth alumina, as found native in a crystalline state. In hardness it is next to the diamond. The amethyst, ruby, sapphire and topaz are considered as varieties of this mineral, which is found in India and China, and is most usually in the form of a six-sided prism or six-sided pyramid. It is nearly pure anhydrous alumina (Al_2O_3), and its specific gravity is nearly four times that of water. Its color is various—green, blue or red, inclining to gray, due to traces of iron, copper, etc. Emery is a variety of corundum.

Corunna (kŏ-r u n' n a; Spanish, *Coruña*), a seaport of Spain, in the province of the same name in Galicia, on the northwest coast, on a peninsula at the entrance of the Bay of Betanzos. It consists of an upper and a lower town, the former built on the E. side of a small peninsula, and the latter on the isthmus connecting the peninsula with the mainland. The harbor, which is well protected, is deep, spacious and safe. Cattle, wine, farm products and fish are exported. Corunna was the port of departure of the Spanish Armada (1588), and the scene of the repulse of the French and the death of Sir John Moore (1809). Pop. 60,178. See map at *Ferrol.*

Corvallis (kor-val'is), a city, county seat of Benton Co., Oregon, 96 miles S. by W. of Portland, on the Willamette River. Seat of the State Agricultural College. It has saw mills, sash and door factories, flour mills, canneries, brick and tile works, and extensive farm interests. Pop. (1920) 5752.

Corvée (kor'vā), in feudal law, an obligation on the inhabitants of a district to perform certain services, as the repair of roads, etc., for the sovereign or the feudal lord. In France this system was not finally abolished until 1792.

Corvette (kor-vet'), a vessel of war, barque or ship-rigged, having a flush deck, with no quarter-deck and only one tier of guns; but the term is now somewhat loosely used. Vessels of this class are now called cruisers.

Corvey, or KORVEI (kor'vī), a formerly renowned Benedictine abbey near Höxter in the Prussian province of Westphalia, founded in 816, an early center of German civilization. Wittekind, the historiographer of the convent; Bruno, known afterwards as Pope Gregory IV, and many other learned men were educated here. To its library belonged the only MS. of the first six books of the *Annals* of Tacitus, discovered here in 1514. The abbey, or castle of Corvey, as it is now called, has a rich and extensive library; but the ancient collection of the Benedictines is no longer in existence.

Corvidæ (kor'vi-dē), the crows, a family of conirostral birds, in which the bill is strong, of conical shape, more or less compressed, and the gape straight. The nostrils are covered with stiff, bristle-like feathers directed forwards. The family includes the common crow, rook, raven, magpie, jay, jackdaw, nutcracker, Cornish chough, etc.

Corvi'nus, MATTHIAS. See *Matthias Corvinus.*

Corvo (kor'vō), the smallest and most northerly of the Azore Islands. Pop. about 1000.

Corwin (kor'win). THOMAS, statesman and orator; born in Bourbon Co., Kentucky, in 1794; died in 1865. He won celebrity as lawyer and orator; was elected to Congress in 1830; supported Harrison for the presidency in 1840; and was elected governor of Ohio. He represented Ohio in the United States Senate, 1845-50, and in the latter year, was appointed Secretary of the Treasury by President Fillmore. He was Minister to Mexico 1861-64.

Cor'yat, THOMAS, an eccentric English traveler, born in 1577; died at Surat India, in 1617. His wanderings, a great part on foot, were through Europe, Asia Minor, Persia, India, etc. His travels were published under such curious titles as *Coryat's Crudities, Coryat's Crambe or Colwort Twice Sodden,* etc. He acted as a sort of butt or foil to the wits with whom he associated in London.

Corybantes (kor-i-ban'tez), frantic priests of Cybele, who celebrated the mysteries with orgiastic dances to the sound of drum and cymbal.

Corymb (kor'imb), in botany, that form of inflorescence in which the flowers, each on its own pedicel of different lengths, are so arranged along a common axis as to form a flat broad mass of flowers with a convex or level top, as in the hawthorn and candytuft.

Corymb.

Corypha (kor'i-fa), a genus of palms, including the fan-palm, gebang palm and taliput.

Coryphæna (kor-i-fē'na), COE'YPHENE, a genus of fishes of the mackerel family (Scomberidæ). The body is elongated, compressed, covered with small scales, and the dorsal fin extends the whole length of the back, or nearly so. The dolphin of the ancients is the *C. hippūris*. All the species, natives of the sea of warm climates, are very rapid in thei motions, and very voracious. They are of brilliant colors, and are objects of admiration to every voyager.

Coryphæus (kor-i-fē'us), the leader of the chorus in the Greek drama. His functions were often as wide as those of our stage-manager, conductor and ballet-master. The name *coryphée* is now applied to a ballet-dancer.

Coryphodon (kor-i-fō-don), a genus of extinct Ungulata, forming a link between the elephants and tapirs, having the ridges of its molar teeth developed into points; found in the Eocene formations of England and France.

Cos, now called STANCHIO or STANKO, an island in the Ægæan Sea, on the coast of Asia Minor; area, 95 square miles; pop. 10,000. It was the birthplace of Hippocrates, and had anciently a celebrated temple of Æsculapius. In Cos was manufactured a fine, semitransparent kind of silk, much valued by the ancients. Cos is also the name of the principal town, a decayed seaport. The island yields grain, wine, silk, etc.

Cosby (kos'bi), WILLIAM, an early English Colonial governor in America. See *Zenger*.

Coseley (kōz'li), an urban sanitary district of West Staffordshire, 11 miles N. of Birmingham. It has extensive iron and other manufactures. Pop. (1911) 22,841.

Cosenza (ko-sen'tsȧ), an episcopal city of Southern Italy, capital of province of Cosenza or Calabria Citeriore, 150 miles S. E. of Naples; pop. 27,048. It has manufactures of silk, pottery and cutlery; the environs are beautiful, and produce abundance of grain, fruit, oil, wine and silk.

Coshering (kosh'er-ing), an ancient right of lodgment in tenants' homes, possessed by Irish landlords.

Coshocton (ko-shok'ton), a city, county seat of Coshocton Co., Ohio, on Muskingum River and Ohio Canal, 69 miles E. N. E. of Columbus. It has manufactures of iron pipe, paper, glass, pottery, furniture, advertising novelties, etc., and is a shipping point for coal, flour, etc. Pop. (1920) 10,847.

Cosmas (kos'mas), surnamed INDICOPLEUSTES ('the Indian navigator'), an Alexandrian merchant and traveler of the sixth century; afterwards a monk. He wrote several geographical and theological works, the most important of which extant is the *Christian Topography*. The author tries to prove that the earth is a parallelogram bounded by walls, which meet and form the vaulted roof which we call the sky.

Cosmetics (kos-met'iks; from Gr. *kosmeō*, I ornament or beautify), external preparations for rendering the skin soft, pure and white, or for beautifying and improving the complexion. To these may be added preparations for preserving or beautifying the teeth, and those which are applied to the hair.

Cosmism (kos'mizm), that system of philosophy, based on the doctrine of evolution, enunciated by Mr. Herbert Spencer and his school; a phase of positivism.

Cosmogony (koz-mog'ō-ni; Greek, *kosmos*, world, and *gonē*, generation), a theory of the origin or formation of the universe. Such theories may be comprehended under three classes:—1. The first represents the world as eternal, in form as well as substance. 2. The matter of the world is eternal, but not its form. 3. The matter and form of the universe are ascribed to the direct agency of a spiritual cause; the world had a beginning, and shall have an end. Aristotle appears to have embraced the first theory; but the theory which considers the *matter* of the universe eternal, but not its *form*, was the prevailing one among the ancients, who, starting from the principle that nothing could be made out of nothing, could not admit the creation of matter, yet did not believe that the world had been always in its present state. The prior state of the world, subject to a constant succession of uncertain movements which chance afterwards made regular, they called *chaos*. The Phœnicians, Babylonians, and also Egyptians seem to have adhered to

this theory. One form of this theory is the atomic theory as taught by Leucippus, Epicurus and Lucretius. According to it, atoms or indivisible particles existed from eternity, moving at hazard, and producing, by their constant meeting, a variety of substances. After having given rise to an immense variety of combinations they produced the present organization of bodies. The third theory of cosmogony may be said to be that generally stated in the first chapter of Genesis, where the act of creation is unequivocally enunciated. This narrative has points in common with several ancient cosmogonies, notably those of the Assyrians and Babylonians. In modern cosmological speculations various causes have been assigned to account for the phenomena of nature.

Cosmos (koz'mos), order or harmony, and hence the universe as an orderly and beautiful system. In this sense it has been adopted by Humboldt as the title of his celebrated work, which describes the nature of the heavens as well as the physical phenomena of the earth.

Cosne (kōn), a town of France, dep. Nièvre, 31 miles N. N. W. of Nevers, on the Loire. Pop. 8437.

Cossacks (kos'aks; *Casacks*), tribes who inhabit the southern and eastern parts of Russia, paying no taxes, but performing instead the duty of soldiers. Nearly all of them belong to the Græco-Russian Church, to which they are strongly attached, and to the observances of which they are particularly attentive. They must be divided into two principal classes, both on account of their descent and their present condition —the Cossacks of Little Russia and those of the Don. Both classes, and especially those of the Don, have collateral branches, distributed as Cossacks of the Azoff, of the Danube, of the Black Sea, of the Caucasus, of the Ural, of Orenberg, of Siberia, of the Chinese frontiers and of Astrakhan. Writers are not agreed as to the origin of this people and of their name, but they are believed to be a mixed Caucasian and Tartar race. In personal appearance the Cossacks bear a close resemblance to the Russians, but are of a more slender make, and have features which are decidedly more handsome and expressive. Originally their government formed a kind of democracy, at the head of which was a chief or hetman of their own choice; while under him was a long series of officers, with jurisdictions of greater or less extent, partly civil and partly military, all so arranged as to be able on any emergency to furnish the largest military array on the shortest notice. The democratical part of the constitution gradually disappeared under Russian domination, and when, in 1917, Russia capitulated to Germany and agreed to the recognition of the separate republic of the Ukraine, there was a vigorous movement for the re-establishing of the Don Cossack republic. The Cossacks were a very important element in the national army of Czarist Russia, forming a first-rate irregular cavalry and rendering excellent services as scouts and skirmishers. The European war, however, was fought more with shells than with horses, and the fact that great Russia laid down her arms before the victorious Teutons is no reflection on the courage and skill of the Cossacks. Every Cossack was liable to military service from 18 to 50. The Cossacks number about 3,259,000. The capital of the Don Cossack territory is Novo Tcherkask, which was founded in 1805. Rostov is the commercial center. Agriculture, live stock, herring-fishing and coal mining are the principal industries of the Cossacks.

Cossus (cos'sus), SERVIUS CORNELIUS, consul at Rome 428 B.C. when in single combat he slew the Veian King Lar Tolumnius, and won the *spolia opima*, which could be gained by a Roman general only from a leader of the enemy.

Costa (kos'ta), LORENZO, born in 1460; died 1535; an Italian painter of the Bolognese school.

Costa, SIR MICHAEL, musical composer and conductor, born at Naples of an old Spanish family in 1810; died in 1884. In 1828 he went to England, and in 1839 became a naturalized British subject. He was conductor of the Philharmonic Society, the Sacred Harmonic Society, Her Majesty's Opera, the Händel Festivals, etc. His chief works are the opera *Don Carlos* and the oratorios *Eli* and *Naaman*. He was knighted in 1869.

Costanoan (kŏs-tā'nō-ăn), a linguistic stock of North American Indians, whose territory extended from the Golden Gate, California, to a point below Monterey Bay. It once consisted of numerous tribes, but now is almost extinct, 30 survivors existing in 1888.

Costa Rica (kos'ta ri'ka), a republican state in the southern part of Central America; bounded N. by Nicaragua, E. and N. by the Caribbean Sea; E. by Panamá; and S. and W. by the Pacific. The area is 23,000 sq. miles, divided into five provinces and two comarcas. The country is intersected diagonally by the primary range or cordillera of the isthmus, which throws off numerous spurs on either side. The chief range con-

tains several lofty eminences (the highest 11,740 feet) and volcanoes, both active and extinct or dormant. Costa Rica is said to contain some rich gold-mines; at present, however, they are not worked to any great extent. Silver and copper are also found. The country is extremely fertile. Coffee, rice, maize, etc., are raised on the tableland in the interior; and cacao, vanilla, sugar, tobacco, bananas, etc., are cultivated in the low coast-regions. Coffee forms the most important product. The forests are valuable, and remarkable for their hardwood timber. The capital is San José, and the two established ports are Punta Arenas, on the Pacific side and Porto Limon, on the Caribbean Sea. It has been an independent state since 1821, from 1824 to 1839 forming a part of the Central American Confederation, but subsequently became separate. Another Confederation was formed in 1872, but did not long continue. In 1912 there were over 400 miles of railway and 1200 miles of telegraph lines. The finances are in some disorder, and education is at a low ebb. The sum of exports and imports amounts to about $15,000,000. Pop. 331,340, mostly of Spanish descent.

Costello (kos-tel'ō), DUDLEY, novelist and journalist, born in Ireland in 1803; died at London in 1865. A constant contributor to many journals and magazines, and author of several popular works of fiction, etc.—His sister, LOUISA STUART COSTELLO, born in 1815; died in 1870; published two romances, entitled *The Queen Mother* (1841) and *Clara Fane* (1848), a poem called *The Lay of the Stork* (1856), and various historical and descriptive works.

Coster (kos'ter), LAURENS (called *Janszoon*, that is, *son of John*), whose name is connected with the origin of printing, was born in Haarlem in 1370 or 1371; died about 1440. He was sacristan (*Koster*) of the parochial church at Haarlem, and from this office he derived his surname. According to a statement first found in Junius' *Batavia* (1588), he was the original inventor of movable types, and on this ground the Dutch have erected statues in his honor. But in 1870 a Dutchman, Dr. Van der Linde, professed to have demolished the claims of Haarlem to the invention of printing, and to have established that Holland, like other countries, was indebted for it to the Mayence school. This conclusion has been rejected by Mr. J. H. Hessels, who, on carefully investigating the matter, thinks it highly probable that Coster was the inventor. Among American printers Gutenberg is credited with the invention. See *Fust*, *Gutenberg* and *Schöffer*.

Costmary (kost'ma-ri; from L. *costos*, an aromatic plant, and *Mary*, the Virgin), or ALECOST (*Balsamita vulgaris*), a composite herbaceous plant, a hardy perennial, a native of Italy, introduced into Britain in 1568, and common in almost every rural garden. It was formerly put into ale to give it an aromatic flavor, hence the name *Alecost*.

Costs, in law, are the expenses incurred by the plaintiff and defendant. As a rule, these are paid by the loser in a suit, but there are always *extrajudicial* expenses incurred by both parties, which each has to pay whatever be the issue of the suit. In criminal cases the party accused may have his expenses if the court thinks the accusation unreasonable. In matrimonial suits, the wife, whether petitioner or respondent, is generally entitled to her costs from the husband.

Costume (kos'tūm), the style of attire characteristic of an individual, community, class, or people; the modes of clothing and personal adornment which prevail in any period or country.—*Costume balls*, also called *fancy dress balls*, are entertainments at which the guests adopt a style of dress different from the one usually worn. It may be one which was worn at another period, or one worn in another country, or a modern dress worn by some particular class of society. A favorite plan is to make up as some well-known character in history or literature.

Côte-d'Or (kōt-dōr), that is, hill or hillside of gold, from the excellence of its vintages, a chain of hills in the east of France, height from 1400 to 1800 feet.

Côte-d'Or, an inland and eastern department of France, part of the old province of Burgundy, having Dijon as its capital. It is watered by the Seine, the Saône, and their affluents, and derives its name from the Côte-d'Or hills (see above), which traverse it from N. E. to S. W. Area, 3382 sq. miles. The vineyards of the eastern slopes of the Côte-d'Or produce the celebrated wines of Upper Burgundy. Iron, coal, marble, etc., are found. Pop. (1906) 357,959.

Côtes-du-Nord (kōt-dū-nōr), a maritime department in the north of France, forming part of ancient Brittany; capital Brieuc. Area, 2659 sq. miles. The coast extends about 150 miles, and the herring, pilchard and mackerel fishing is actively pursued. One of the main branches of industry is the

rearing of cattle and horses. In manufacturing industries the principal branch is the spinning of flax and hemp and the weaving of linen and sailcloth. Among the minerals are iron, lead and granite. Pop. 611,506.

Coteswold (or COTTESWOLD) HILLS. See *Cotswold Hills.*

Cöthen. See *Coethen.*

Cothur'nus. See *Buskin.*

Cotidal Lines (kō-tī'dal), a system of lines on a globe or chart marking the places where high water occurs at the same instant.

Cotillion (kō-til'yun), a brisk dance of French origin performed by eight persons together, resembling the quadrille, which superseded it. The name is now given to a dance which often winds up a ball, and which is danced with any number of dancers and with a great variety of figures, the pairs of dancers following in this the leading pair, and partners being successively changed.

Cotingas (k o - t i n' g a s), a family of tropical American birds, some of which have splendid plumage, or are otherwise remarkable. See *Bell-bird, Umbrella-bird.*

Coto (kō'tō), the reddish-brown, aromatic and slightly bitter bark of *Palicourea densiflōra*, order Rubiaceæ, a tree of South America imported into Europe and used as a remedy in diarrhea and profuse sweating.

Cotoneaster (kot-on-e-as'ter), a genus of small trees or trailing shrubs, nat. order Rosaceæ. *C. vulgāris* is a British species, having rose-colored petals and the margins of the calyx downy. The other species are natives of the south of Europe and the mountains of India. They are all adapted for shrubberies.

Cotopaxi (kō-tō-paks'i), the most remarkable volcanic mountain of the Andes, in Ecuador, about 60 miles N. E. of Chimborazo; lat. 0° 43′ S.; lon. 78° 40′ W.; altitude 19,500 feet. It is the most beautiful of the colossal summits of the Andes, being a perfectly symmetrical truncated cone, presenting a uniform unfurrowed field of snow of resplendent brightness. Several terrific eruptions of it occurred in the course of the eighteenth and the beginning of the nineteenth century.

Cotrone (k o - t r ō' n a), a seaport of Southern Italy, province of Catanzaro, on the site of the ancient Croton. It has a cathedral, is defended by a citadel and otherwise fortified. Pop. 7917

Cotswold Hills (kots'wōld), a range of hills in England, County Gloucester, which they traverse N. to S. for upwards of 50 miles; extreme elevation near Cheltenham, 1134 feet. The *Cotswold sheep* are a breed of sheep remarkable for the length of their wool, formerly peculiar to the counties of Gloucester, Hereford, and Worcester.

Cotta (kot'ta), JOHANN FRIEDRICH, BARON VON, an eminent bookseller of Germany, born in 1764; died in 1832. He began business at Tübingen, but in 1811 removed to Stuttgart. He was the publisher for many great writers in Germany, including Goethe, Schiller, Wieland, Richter, Uhland, Fichte, Hegel, the Humboldts, and others.

Cottabus (kot'a-bus), an ancient Greek game, which consisted in throwing wine from cups without spilling, into little basins of metal, suspended in a particular manner or floating in water.

Cottage (kot'aj), a small country residence or detached suburban house, adapted to a moderate scale of living, yet with all due attention of neatness, comfort and refinement.

Cottbus. See *Kottbus.*

Cottier Tenure (kot'i-er ten'ûr), a system of tenure according to which laborers rent small portions of land directly from the owner, or from a farmer, often giving personal service as part of the rent, and holding by annual tenancy.

Cottin (kot-an), SOPHIE RISTAUD, better known by the name of *Madame Cottin*, a French novelist, born in 1773; died in 1807. In 1790 she married M. Cottin, a banker of Bordeaux, who died in 1793, and thenceforth she followed literature. Her best-known work is *Elizabeth, or the Exiles of Siberia;* other novels are *Claire d'Albe, Malvina, Amélie* and *Mathilde.*

Cottle (kot'l), JOSEPH, a bookseller and publisher of Bristol, England, and the author of some now almost completely forgotten poems, was born in 1774; died in 1853. He was a generous friend to Coleridge and Southey in their early days, and wrote an interesting volume of recollections of those authors.

Cotton (kot'n), the soft cellular hairs which encircle the seeds of plants of the genus *Gossypium*, nat. order Malvaceæ. The genus is indigenous to both the Old and the New World, and the plants are now cultivated all over the world within the limits of 30° north and south of the equator. All the species are perennial

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COTTON PICKER

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COTTON PLATFORM AND COMPRESSOR

Experts have for many years been seeking a machine for picking cotton. The one illustrated above is an ingenious device which propels itself, picks the cotton, and stores it in the bags at the rear. In the lower view the machine seen in the background presses the cotton into bales, which are bound with steel tape.

shrubs, though in cultivation they are sometimes treated as if they were annuals. They have alternate stalked and lobed leaves, large yellow flowers, and a three or five celled capsule, which, when ripe, bursts open through the middle of the cell, liberating the numerous black seeds covered with the beautiful filamentous cotton. The North American cotton is produced by *Gossypium barbadense*, and two well-marked varieties are cultivated, the long-staple cotton, which has a fine, soft, silky fiber nearly 2 inches long, and the short-stapled cotton, which has a fiber little over 1 inch long adhering closely to the seed. The long-staple variety, known as Sea Island cotton, holds the first place in the market. It is grown in some of the southern United States, especially on islands bordering the coast. The cotton grown in South America is obtained from *G. Peruvianum*, called also kidney cotton. The indigenous Indian species is *G. herbacĕum*, which yields a short-stapled cotton. It is grown throughout the Mediterranean region as well as in Asia. The mode of cultivating cotton is usually as follows:—The seeds are sown in the spring in drills of about a yard in width, the plant appearing above ground in about eight days afterwards. The rows of young plants are then carefully weeded and hoed, a process which requires to be repeated at two or three subsequent periods. No hoeing takes place after the flowering has commenced, from which a period of seventy days generally elapses till the ripening of the seed. To prevent the luster of the cotten wool from being tarnished, the pods must not remain ungathered longer than eight days after coming to maturity. The cotton-wool is collected by picking with the fingers the flakes from the pods, and then spreading out to dry, an operation which requires to be thoroughly performed. A machine has recently been invented which is asserted to pick cotton satisfactorily. The cotton then comes to be separated from the seeds, a process formerly effected by manual labor, but which has long been done by the cotton-gin. After being cleansed from the seeds, the cotton-wool is formed into bales, and is ready for delivery to the manufacturer.

Cotton has been cultivated in India and the adjacent islands from time immemorial. It was known in Egypt in the sixth century before the Christian era, but was then probably imported from India. It was not till a comparatively late period that the nations of the West became acquainted with this useful commodity, and even then it appears only to have been used as an article of the greatest luxury, The introduction of the cotton-shrub into Europe dates from the ninth century, and was first effected by the Spanish Moors, who planted it in the plains of Valencia. Cotton manufactories were shortly afterwards established at Cordova, Granada and Seville; and by the fourteenth century the cotton stuffs manufactured in the kingdom of Granada had come to be regarded as superior in quality to those of Syria. About the fourteenth century cotton thread began to be imported into England by the Venetians and Genoese. In China the cotton-shrub was known at a very early period, but it does not appear to have been turned to any account as an article of manufacture till the sixth century of the Christian era, nor was it extensively used for that purpose till nearly the middle of the fourteenth century. In the New World the manufacture of cotton cloth appears to have been well understood by the Mexicans and Peruvians long before the advent of Europeans. It was planted by the English colonists of Virginia in 1621, but only as an experiment, and the amount produced was long very small, the crop amounting only to about 2,000,000 lbs. in 1791. In the following year the cotton-gin was invented, and the rapidity with which the fiber could be removed from the seed led to a rapid and great increase, the United States becoming in the following century the great producer of cotton. The cotton-plant is chiefly cultivated for the fiber growing upon the seed, but the seed itself has proved commercially valuable. Formerly a waste product, it now forms an essential part of the crop's value, yielding large quantities of cottonseed-oil and oil-cake. The fiber from the inner bark also

Herbaceous Cotton Plant (*Gossypium herbacĕum*).

shows possibilities of importance, being little inferior to jute, and much resembling it. Although cotton is a tropical plant, its cultivation is conducted most successfully in the temperate zone. The conditions most favorable to its growth and development are six months exemption from frost, moderate rainfall during growth, and while maturing abundant sunshine with little moisture. The Southern States of this country supply these conditions better than elsewhere, and they have no competitor in the quantity and few in the quality of the fiber produced. The amount grown enormously exceeds that of any other part of the world. The yield ranges from one-fourth of a bale of 500 lbs. to two bales per acre. If the lint alone is removed from the land, cotton is the least exhausting of the various crops of the United States. The quantity of cotton grown in the United States for the year preceding the census of 1900, as given therein, was 9,345,391 bales of a total gross weight of 4,672,695,500 lbs. In 1911 the crop reached the great total of 14,332,756 bales, the largest ever grown.

Cotton, CHARLES, an English writer, born in 1630; died in 1687. He lived the life of a country gentleman, being a great angler and skilled in horticulture. His works are numerous, including *Scarronides, or Virgil Travestie, Instructions how to Angle for a Trout and Grayling in a Clear Stream*, a supplement to his friend Izaak Walton's *Compleat Angler; Poems on Various Occasions;* translations of Montaigne's *Essays*, Corneille's *Horace*, etc. He wrote well both in poetry and prose.

Cotton, SIR ROBERT BRUCE, an English antiquary and collector of literary relics; born in 1570; died in 1631. He assisted Camden in his labors on the *Britannia;* and was made a baronet in 1611. He wrote numerous antiquarian pamphlets, but he is chiefly remembered for the magnificent library of ancient charters, records and other MSS. which he collected, and which passed to his heir intact, and was acquired by the nation in 1706. After being partially destroyed by fire in 1731, it was placed in the British Museum in 1757.

Cotton-gin, a machine employed in the production of cotton-fiber, it being adapted to remove the lint from the seed to which it clings. When this has been done there remains of the product as gathered about one-third in weight of clean cotton, fitted for manufacture, and two-thirds of seed, of value for the oil it contains. Originally the work of separating the lint from the seed was a slow and difficult process, it being done by hand, a good day's work for a man being a few pounds of lint. The result was that American cotton could not compete with that of India and the West Indies, and very little was raised until after the invention of the cotton-gin. In India and China a crude and simple machine has long been used as a substitute for hand labor. It is called the 'churka' and is known in Italy as the 'manganello', and consists of two wooden rollers fixed in a frame and revolving in contact with each other, the cotton being drawn between them and the seed excluded. Various efforts have been made to improve this machine, which is still largely used in India, but it is impossible to clean cotton rapidly by this means, and gins have been introduced into the principal cotton districts to replace it. The cotton-gin (the word 'gin' being a contraction for 'engine') was invented in 1792, by Eli Whitney, a native of Connecticut, then living in Savannah, Georgia, as a tutor in the house of Mrs. Greene, the widow of General Greene of Revolutionary fame. His mechanical ingenuity was so evident that Mrs. Greene suggested to him the desirability of attempting to produce a cotton-cleaning machine for the benefit of the planters of the State. Whitney soon devised a machine, simple in principle, but effective in action. It is still in use throughout the South, improved but its principle unchanged. It consists of a grid or grating of parallel wires, set so close together that the cotton can easily pass between them but the seeds cannot. A set of circular saws, with sharp teeth, are so arranged that the teeth pass between the wires and when in revolution catch the fiber, tearing it loose from the seeds and pulling it between the wires, while the seeds slide down into a receptacle below. An additional necessary feature is a revolving brush which sweeps the cotton from the saw teeth and keeps them clean. Such is, in brief, the principle of the famous cotton-gin, which has been worth hundreds of millions of dollars to the planters of the South.

The effect of this machine on the cotton industry of the South was remarkable. In 1792, when Whitney's machine was produced, the United States produced only 500,000 pounds of cotton and all the cotton raised could have been grown on a field of a few hundred acres. In 1800 the crop was 18,000,000 pounds; ten years later it was 80,000,000 pounds; in 1830 a million bales. It has varied in late years from 10,000,000 to 16,000,000 bales. This great development would have

been impossible without Whitney's invention, which, however, was pirated, he receiving little benefit from it. The action of the machine, it must be said, is very hurtful to the fiber, it being in this way a wasteful and costly apparatus. This injury was especially great with the long-stapled cotton, the fibers of which were found to be more or less cut, or 'nepped', by the tearing action of the saws. To prevent this another American invention, the Macarthy gin, has come into use for cleaning the long-stapled Sea Island, Egyptian and Brazilian cotton. In this the fiber is drawn by a leather roller between a metal plate called the 'doctor', fixed tangentially to the roller, and a blade called the 'beater', which moves up and down in a plane immediately behind and parallel to the fixed plate. As the cotton is drawn through by the roller, the seeds are forced out by the action of the movable plate, which acts vertically in some machines and horizontally in others. Attempts have been made to improve both the saw and the roller machines, in the one case to prevent injury to the staple, in the other to add to the rapidity of the cleaning process. One of these is the 'needle' saw-gin, an invention intended to prevent the fiber from being cut. It consists of steel wire set in block tin, with the bottom of the teeth rounded or made smooth. On the other hand the Macarthy gin has been developed into a double action machine, with two movable blades or beaters. Also the 'knife roller' gin, the 'lockjaw' gin, and others have appeared as rivals to the saw-gin. The machine which will clean the largest quantity in the shortest space of time is naturally preferred, unless the injury to the staple is such as to reduce its market value. The production of the most efficient cotton-cleaning machinery is, therefore, of importance alike to the planter and the manufacturer. Until recent years the ginning was done on the plantations. Nearly the whole of it is now done in public ginneries with steam power and much more rapid production. The saw-gin is five times as fast as the roller-gin in its operation and is used throughout the Southern States except in the region of Sea Island cotton.

Cotton-grass, the popular name of plants of the genus *Eriophŏrum*, order Cyperaecæ or sedges. Several species occur in the United States and in Great Britain, in moory or boggy places, and the white, cottony substance they produce is used for stuffing pillows, etc.

Cotton-picker, MECHANICAL. Cotton has hitherto been picked by hand, the negroes of the South being employed. This method has long been unsatisfactory, for various reasons, and various efforts to produce a mechanical cotton-picker have been made. One tested in 1910 proved very satisfactory. It was operated by a gasoline motor, and picked the cotton by mechanical fingers, performing its work thoroughly and without injury to the plant or the unopened bolls, and at a cost much below that of hand-picking. It is the invention of Angus Campbell, a Scotchman.

Cottonseed Oil, a valuable oil expressed from the seeds of the cotton-plant, used as an adulterant or as a substitute for various other oils. The oil-cake of cottonseed is a valuable cattle-feeding substance.

Cotton-spinning, a term employed to describe in the aggregate all the operations involved in transforming raw cotton into yarn. The word 'spinning' has also a more limited signification, being used to denote the concluding process of the series. The following affords a general notion of the nature and order of the successive operations carried on in the manufacture of cotton yarn.—(1) *Mixing*, the blending of different varieties of raw cotton, in order to secure economical production, uniform quality and color, and an even thread in any desired degree. (2) The *willowing*, *scratching*, or *blowing*, an operation which cleans the cotton and prepares it in the form of a continuous lap or rolled sheet for the next process. (3) *Carding*, an operation in which the material is treated in its individual fibers, which are taken from the lap, further cleansed, and laid in a position approximately parallel to each other, forming a thin film, which is afterwards condensed into a sliver—a round, untwisted strand of cotton. (4) *Drawing*, the drawing out of several slivers to the dimensions of one, so as to render the new sliver more uniform in thickness, and to place the fibers more perfectly in parallel order. (5) *Slubbing*, the further drawing or attenuation of the sliver, and slightly twisting it in order to preserve its cohesion and rounded form. (6) *Intermediate* or *second slubbing*, a repetition of the former operation and further attenuation, not necessary in the production of coarse yarns. (7) *Roving*, a continuation of the preceding, its principal object being still further to attenuate the sliver, and give it a slight additional twist. (8) *Spinning*, which completes the extension and twisting of the yarn. This is accomplished either with the throstle or the mule. By means of the former machine the yarn receives

a hard twist, which renders it tough and strong. By means of the latter yarns of less strength are produced, such as warps of light fabrics and wefts of all kinds. (See *Thread* and *Weaving*.) Up to the middle of the last century the only method of spinning known was that by the hand-wheel, or the still more primitive distaff and spindle. In 1767 a poor weaver of the name of Hargreaves, residing at Stanhill, in Lancashire, England, invented a machine for spinning cotton, which he named a *spinning-jenny*. It consisted at first of eight spindles, turned by a horizontal wheel, but was afterwards greatly extended and improved so as to have the vertical substituted for the horizontal wheel, and give motion to from fifty to eighty spindles. In 1769 Arkwright, originally a barber's apprentice, took out a patent for spinning by rollers. From the circumstances of the mill erected by Arkwright at Cromford, in Derbyshire, being driven by water-power, his machine received the name of the *water-frame*, and the thread spun on it that of *water-twist*. The next important invention in cotton-spining was that of the *mule*, introduced by Mr. Samuel Crompton, of Bolton, in 1775, and so called from its combining the principle of the spinning-jenny of Hargreaves with the roller-spinning of Arkwright. Numerous improvements in cotton-spinning have been introduced up to the present day, but they are all modifications of the original inventions. Among these is the *throstle*, an extension and simplification of the original spinning-frame, introduced about the year 1810. The first machines set up in the United States were at East Bridgewater, Mass., in 1786, by two Scotchmen. In 1812 Francis C. Lowell introduced the Cartwright power-loom at Lowell, Mass., which is now the largest cotton-manufacturing center in America. There are also extensive mills in active operation in Alabama, Georgia and other Southern States.

Cotton-worm, a caterpillar which feeds on the leaves of the cotton-plants, in such multitudes as to cause serious mischief. It changes into a pale, reddish-green moth.

Cottus, a genus of fishes. See *Bull-head*.

Coturnix. See *Quail*.

Cotyledons (kot-i-lē'dons), the seed-leaves or seed-lobes of the embryo plant, forming, together with the radicle and plumule, the embryo, which exists in every seed capable of germination. Some plants have only one cotyledon, and are accordingly termed *monocotyledonous;* others have two, and are *dicotyledonous*. These differences are accompanied by remarkable differences in the structure of the stems, leaves and blossoms, which form the basis for the

COTYLEDONS.
1, Monocotyledon (seed of *Arum maculatum*). 2, Dicotyledon (seed of *Papaver Rhœas*). 3, Polycotyledon (seed of *Pinus sylvestris*).

division of flowering plants into two great classes. The embryo plant of the Coniferæ has many (three to twelve) cotyledons, and is called *polycotyledonous*. The cotyledons contain a supply of food for the use of the germinating plant. In some plants the store is very large, and in germination the seed-leaves remain under the ground, as in the pea and oak; in others the store is not so large, and the seed-leaves appear above ground and perform the functions of true leaves; while there is a large class of seeds where the embryo is very small, and the food is stored up around it, as in wheat and the buttercup.

Couchant (kouch'ant), in heraldry, said of a beast lying down with the head raised.

Couch Grass (QUITCH, or QUICK) (*Triticum repens*), a perennial grass, which is propagated both by seed and by its creeping root-stock, and is one of the most common and troublesome weeds of agriculture. When it first appears above ground its blade is readily eaten by sheep. The roots are readily eaten by pigs, and when cleaned and boiled or steamed become a farinaceous and nutritious food for cows and horses. It is the grass eaten by dogs as an emetic.

Couching (kouch'ing), an old operation for cataract, which consisted in passing a needle into the eye, and with it pushing the lens out of its place to leave the pupil of the eye clear.

Coucy (kō-sē), RENAUD, CHATELAIN DE, an old French poet, born about 1160; killed at Acre in 1191. His songs are distinguished by great warmth of passion. He is the hero of a celebrated romance of the thirteenth century.

Coues (kows), ELLIOTT, naturalist, was born at Portsmouth, New Hampshire, in 1842; died in 1899. He became a doctor and served as such in the army

from 1862 to 1881, also holding official positions in the northern boundary survey and the geological survey of the territories. He was professor of anatomy in the National Medical College at Washington 1877-87, and in 1883 of biology in Virginia Agricultural College. His works include *Key to North American Birds* and various other works on birds, *Fur-Bearing Animals*, *Biogen*, *Expedition of Lewis and Clark*, etc.

Cougar (kö'gär), a voracious quadruped of the cat kind, inhabiting most parts of America—*Felis concŏlor*. Its color is a uniform fawn or reddish brown, without spots or markings of any kind. It may attain a length of 9 feet, inclusive of the tail. In habits it is stealthy and cowardly, and seldom or never attacks man. It is by some called the puma or red tiger, and is one of the most destructive of all the animals of America, particularly in the warmer climates, where it carries off fowls, dogs, cats and other domestic animals.

Cough (kof), a sudden and forcible expiration immediately preceded by closure of the glottis or narrowed portion of the box of the windpipe. The force for the action is obtained by a deep breath, then follows the closure of the glottis, succeeded by the expiratory effort forcing open the glottis. The action is performed by the expiratory muscles, that is, the abdominal muscles, by whose contraction the diaphragm is forced up, and the muscles of the chest, by which the ribs are pulled down. The cavity of the chest being thus diminished, air is driven out of the lungs. The object of the cough is usually to expel any foreign material in the lungs or air tubes. The offending material may be there present as the result of inflammation, catarrh, etc. It may also have gained entrance by inspiration. Thus, the irritating material may be merely some food or drink which has slipped into the larynx, or it may be dust, etc., in the air inhaled, and the cough is the means of expelling the intruder. But cough may also be produced when there is no irritating material present. The larynx or windpipe may be in an inflamed and irritable condition, in which state even the entrance of cold air will excite coughing. Moreover, cough may be produced by irritation of nerves, distant from the lungs and air passages, by what is called reflex action. Thus, irritation of the stomach, irritation connected with the ear, irritation of certain nerves by pressure of growths, etc., may produce cough, when the respiratory organs are not directly affected at all. Irritation at the back of the throat, as of the tickling by a long uvula, and so on, also produces it. A catarrhal cough is generally considered unimportant, particularly if there be no fever connected with it. But every cough lasting longer than two or three days is suspicious and ought to be medically treated.

Coulisse (kö-lis'), one of the side scenes of the stage in a theater, or the space included between the side scenes; properly one of the grooved pieces of wood, etc., in which a flat scene moves.

Coulomb (kö-lôn), CHARLES AUGUSTIN DE, French physicist, born in 1736 at Angoulême; died in 1806. His fame rests chiefly on his discoveries in electricity and magnetism, and on his invention of the torsion balance.

Coulomb, or AMPERE-SECOND, is the working unit of electrical energy. When a current having the strength of 1 ampere passes through a 1-ohm-resistance conductor in 1 second of time it constitutes a coulomb. Named after C. A. Coulomb (see preceding article).

Coumarin (kö'ma-rin), a vegetable proximate principle, obtained from the *Diptĕrix odorāta*, or Tonka bean, sweet woodruff, sweet-scented vernal grass, melilot, etc. It has a pleasant, aromatic odor, and a burning taste; and is used in perfumery, in medicine, and to give flavor to certain varieties of Swiss cheese.

Council (koun'sil; Lat. *concilium*), an assembly met for deliberation, or to give advice. The term specially applies to an assembly of the representatives of independent churches, convened for deliberation and the enactment of canons or ecclesiastical laws. The four general or ecumenical councils recognized by all churches are: (1) the Council of Nice, in 325, by which the dogma respecting the Son of God was settled; (2) that of Constantinople, 381, by which the doctrine concerning the Holy Ghost was decided; (3) that of Ephesus, 431; and (4) that of Chalcedon, 451, in which last two the doctrine of the union of the divine and human nature in Christ was more precisely determined. Among the principal Latin councils are that of Clermont (1096), in the reign of Urban II, in which the first crusade was resolved upon; the Council of Constance, the most numerous of all the councils, held in 1414, which pronounced the condemnation of John Huss (1415), and Jerome of Prague (1416); the Council of Basel, in 1431, which intended a reformation, if not in the doctrines, yet in the constitution and dis-

[illegible] theory. [illegible] of this theory is [illegible] the atomic theory as taught by [illegible] [illegible] Epicurus and [illegible]. According [illegible] atoms or [illegible] particles [illegible] from eternity, moving at [illegible] and [illegible] by their constant meeting [illegible] of substances. After having given [illegible] to an immense variety of [illegible] these they produced the present organi[illegible] series of bodies. The third theory of cosmogony may be said to be that gener[illegible] ally stated in the first chapter of Genesis, where the act of creation is [illegible] enunciated. This narrative has points in common with several ancient cosmogonies, notably those of the Assyrians and Baby[illegible] lonians. In modern cosmogonies, spec[illegible] ulations various [illegible] have been de[illegible] signed to account for the phenomena of nature.

Cosmos [illegible] order or harmony, and hence the universe as an orderly and beautiful system. In this sense it has been adopted by Humboldt as the title of his [illegible] work which describes the nature of the universe as well as the physical phenomena of the earth.

Cosne [illegible], a town of France, dep. Nièvre, [illegible] miles s. s. w. of Nevers, on the Loire. Pop. [illegible].

Cossacks [illegible] (Cosaks), tribes who inhabit the southern and eastern parts of Russia, paying no taxes, but performing instead the duty of soldiers. Nearly a [illegible] of them belong to the Greco-Russian Church, to which they are strongly attached, and to the ceremonies of which they are particularly attentive. They must be divided into two principal classes, both on account of their descent and their present condition —the Cossacks of Little Russia and those of the Don. Both classes, and especially those of the Don, have collateral branches, distributed as Cossacks of the Azoff, of the Danube, of the Black Sea, of the Caucasus, of the Ural, of Orenberg, of Siberia, of the Chinese frontiers and of Astrakhan. Writers are not agreed as to the origin of this people and of their name, but they are believed to be a mixed Caucasian and Tartar race. In personal appearance the Cossacks bear a close resemblance to the Russians, but are of a more slender make, and have features which are decidedly more handsome and expressive. Originally their government formed a kind of democracy, at the head of which was a chief or hetman of their own choice; while under him was a long series of officers, with jurisdictions of greater or less extent, partly civil and partly military, all so arranged as to be able on any emergency to furnish the largest military army in the shortest [illegible]. [illegible] part of the [illegible] [illegible] under Russian [illegible], and [illegible] Russia [illegible] many and [illegible] in the [illegible] of the separate [illegible] of the [illegible]. There was a [illegible] movement for the [illegible] of the Don Cossack [illegible]. The Cossacks were a very important element in the national army of [illegible] Russia, forming a [illegible] [illegible] and rendering excellent service as scouts and [illegible]. The European war, however, was fought more with shells than with [illegible], and the fact that great Russia [illegible] [illegible] [illegible] the [illegible] [illegible] in the [illegible] and [illegible] of the Cossacks. Every Cossack was liable to military service from [illegible] to [illegible]. The Cossacks number about [illegible]. The capital of the Don Cossack territory is Novo Tcherkask, which was founded in [illegible]. [illegible] is the commercial center. Agriculture, [illegible], [illegible]-raising and [illegible] are the principal industries of the Cossacks.

Cossus [illegible]. [illegible] [illegible] consul at Rome [illegible] B.C. [illegible] in single combat he slew the [illegible] King Lar T[illegible] and won the spolia opima, which could be gained by a Roman general only from a leader of the enemy.

Costa [illegible], Lorenzo, born in 14[illegible]; died 15[illegible]; an Italian painter of the Bolognese school.

Costa, Sir Michael, musical composer and conductor, born at Naples of an old Spanish family in 1810; died in 1884. In 1829 he went to England, and in 1839 became a naturalized British subject. He was conductor of the Philharmonic Society, the Sacred Harmonic Society, Her Majesty's Opera, the Händel Festivals, etc. His chief works are the opera *Don Carlos* and the oratorios *Eli* and *Naaman*. He was knighted in 1869.

Costanoan (kōs-tä'nō-än), a linguistic stock of North American Indians, whose territory extended from the Golden Gate, California, to a point below Monterey Bay. It once consisted of numerous tribes, but now is almost extinct, 30 survivors existing in 1888.

Costa Rica (kos'ta rī'ka), a republican state in the southern part of Central America; bounded N. by Nicaragua, E. and N. by the Caribbean Sea; E. by Panamá; and S. and W. by the Pacific. The area is 23,000 sq. miles, divided into five provinces and two comarcas. The country is intersected diagonally by the primary range or cordillera of the isthmus, which throws off numerous spurs on either side. The chief range con-

talus that supports the earth of the covered way. It often signifies the whole covered way, with its parapet and glacis.

Countersign (-sīn), a private signal, word, or phrase given to soldiers on guard, with orders to let no man pass unless he first give that sign; a military watchword.

Coun'tertenor (-ten-or), in music one of the middle parts between the tenor and the treble; high tenor. It is the highest male adult voice, having its easy compass from tenor G to treble C, and music for it is written on the alto or C clef on the middle line of the staff. The lowest voices of females and boys have about the same register, and are sometimes inaccurately called countertenor. The correct term is *alto* or *contralto*.

Count Palatine (pal'a-tīn), in England, formerly the superior of a county, who exercised regal prerogatives within his county, in virtue of which he had his own courts of law, appointed judges and law officers, and could pardon murders, treasons and felonies. All writs and judicial processes proceeded in his name, while the king's writs were of no avail within the palatinate. The Earl of Chester, the Bishop of Durham and the Duke of Lancaster were the Counts Palatine of England, the corresponding counties being called *counties palatine*.

Country Dance (kun'tri dans), a rustic dance of English origin, in which many couples can take part. The performers are arranged face to face, the gentlemen on one side and the ladies on the other, and go through certain prescribed figures.

County (koun'ti), originally a district of a country subject to a *count* or earl. The county in the United States has developed from the English county of the seventeenth century; but the organization of county administration has been thoroughly decentralized by the radical extension of popular election for all classes of officials. The principal county authority is the locally-elected county board, organized in various ways. Every county also has a sheriff and usually other elective officers, such as prosecuting attorney, treasurer, clerk and coroners. In many states there are county registers of deeds, auditors, assessors, school commissioners and surveyors. County administration varies in different states.

County Courts, are an ancient institution in England. Their jurisdiction was formerly very restricted, but they have had extensive powers conferred on them by recent acts of Parliament. In the United States there is a regular court in each county, presided over by a judge elected by the people or appointed by the governor and senate.

County Palatine, a county under a count palatine. See *Count Palatine*.

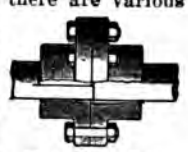
Coup (kö; French, a blow), a term used in various connections to convey the idea of promptness and force. —*Coup de main*, a prompt, vigorous and successful attack.—*Coup d'état*, a sudden decisive blow in politics; a stroke of policy; specifically, an exertion of prerogative to alter the laws or the constitution of a country without the consent or concurrence of the people expressed through their representatives, especially when such exertion is supported by armed force.—*Coup de soleil*. See *Sunstroke*.

Coupé (kö-pā), a four-wheeled carriage carrying two inside, with a seat for the driver outside.

Couple (kup'l), in dynamics, two equal and parallel forces acting in different directions and applied to the same body. The distance between their lines of action is called the *arm* of the couple, and the product of one of the two equal forces by this arm is called the moment of the couple.

Couplet (kup'let), two verses or lines of poetry of equal length and rhythm, often embodying an idea of the nature of an aphorism.

Coupling (kup'ling), in machinery, a contrivance for connecting one portion of a system of shafting with another, and of which there are various forms. A common form is the flange or plate coupling, which consists of two flanges separately fitted on to the two contiguous ends of the lengths of shaft to be connected, and firmly secured together by screws. The most useful kinds of couplings are those that are adjustable, or can be readily put on and off.—The term is also applied to an organ register, by which two or more rows of keys can be connected by a mechanism, so that they can be played together. It is also applied to methods and art of attaching railroad cars together.



Flange Coupling.

Coupon (kö'pon; from Fr. *couper*, to cut), an interest certificate printed at the bottom of transferable bonds, and so called because it is cut off or detached and given up when a pay-

ment is made. Also one of a series of tickets which binds the issuer to make certain payments, perform some service, or give value for certain amounts at different periods, in consideration of money received.

Courbevoie (körb-vwä), a town of France, department Seine, on the left bank of the Seine, 5 miles N. W. of Paris, well built, with large barracks; pop. (1911), 38,138.

Courier (kör'i-ėr), a bearer of special despatches, whether public or private; also an attendant on a party traveling abroad, whose especial duty is to make all arrangements at hotels and on the journey.

Courland (kur'land; German, *Kurland*), a government in Russia, bounded N. by Livonia and the Gulf of Riga, W. the Baltic, S. Kovno, and E. by Vitebsk; area 10,535 square miles; pop. 714,200. In the neighborhood of Mittau, the capital, the surface is diversified by hills of very moderate height; but elsewhere, and particularly towards the coast, it is flat and contains extensive sandy tracts, often covered with heaths and morasses. About two-fifths of the whole government is occupied by woodland. The peasantry are for the most part Letts; the more wealthy and intelligent classes Teutons, the prevailing religion being Lutheran. The territory was subjected to Poland in 1561, conquered by Charles XII of Sweden in 1701, and was merged in Russia in 1795. It was one of the new states formed by the Germans after the capitulation of Russia in 1917. A state council was created by the German imperial government to direct the internal affairs of Courland. This consisted of barons, large land owners, and other members, all of the Germanic race.

Courser (kör'ser), or COURIER (*Cursorius*), a genus of gralla'orial birds belonging to the plover tribe. They are found chiefly in Africa, but one species, the cream-colored courser, has been met with in Britain.

Coursing (kör-sing), a kind of sport in which hares are hunted by greyhounds, which follow the game by sight instead of by scent. Meetings are held in various localities, at which dogs are entered for a variety of stakes, as horses are at a race meeting. When a hare is started it is allowed a certain advance on the dogs, which are then let loose from the 'slips' or cords held by the 'slipper' and fastened to the dogs' collars. A judge keeps his eye on the dogs, and notes what are called 'points,' the victory being adjudged to the dog which makes the most 'points.'

Court (kört). (1) All the surroundings of a sovereign in his legal state; the body of persons who compose the household of, or attend on, a sovereign. *Presentation at Court* is a formal introduction of persons of some eminence or social standing to the British sovereign on certain state occasions appointed for the purpose. They have to appear in the regulation 'court dress.' (2) A tribunal of justice; the hall, chamber, or place where justice is administered, or the persons (judges) assembled for hearing and deciding causes, civil, criminal, military, naval, or ecclesiastical. Courts may be classified in various ways. A common distinction is into *courts of record* and *not of record;* the first being those the judicial proceedings of which are enrolled in records. They may also be divided into courts of *original jurisdiction* and courts of *appeal*, or of *appellate jurisdiction*, *inferior* and *superior* courts, etc. Articles on the different courts will be found under such separate headings as *Chancery*, *Common Pleas*, *Exchequer*, *Supreme Court*, etc.

Court-baron, in England, a court composed of the freeholders of a manor, presided over by the lord of the manor or his steward. These courts have long fallen into disuse.

Court de Gébelin (kör-d-zhä-blan), ANTOINE, a French writer, born in 1725; died in 1784. He published, in 1773 and 1774, *Le Monde Primitif Analysé et Comparé avec le Monde Moderne*, which, after nine volumes had appeared, remained unfinished. Its vast plan embraces dissertations on mythology, grammar, origin of language, history, etc. He also published *Lettres Historiques et Apologétiques en Faveur de la Religion Réformée.*

Courtesy (kür'té-si), TENURE BY, in English law, is where a man marries a woman seized of an estate of inheritance, and has by her issue capable of inheriting her estate. In this case, on the death of his wife he holds the lands for his life, as tenant by courtesy.

Courtesy Title, a title assumed by an individual or given to him by popular consent, to which he has no valid claim. When a British nobleman has several titles it is usual to give one of his inferior titles to his eldest son. Thus, the eldest son of the Duke of Bedford is *Marquis* of Tavistock, and the Duke of Buccleuch's eldest son is *Earl* of Dalkeith. The younger sons of noblemen have the courtesy title of *Lord* prefixed to their names, as *Lord* William Lennox. In Scotland, the eldest son of a

viscount or baron has the courtesy title of *Master*, as the *Master* of Lovat, eldest son of Lord Lovat.

Court Hand, the old Gothic or Saxon hand or manner of writing used in records and judicial proceedings, and distinguished from the modern or Italian style.

Court Leet, in English history the criminal court, as the court baron was the civil court, of a manor. The right to hold it was granted by royal franchise to the lord of the manor. In some parts of England courts leet are still maintained in form, though they have ceased to have jurisdiction.

Court-martial, a court consisting of military or naval officers, for the trial of military or naval offenses.

Court of Arbitration, a court established at The Hague, Netherlands, by the Peace Convention of 1899. Its membership now includes distinguished legal authorities of all the civilized nations of the world. Since its establishment several important questions have been submitted to and decided by it, possible hostilities being thus avoided. See *Arbitration*.

Court of Claims, in the United States, created by Congress in 1855, has jurisdiction to hear and determine all claims founded upon any act of Congress, or on any regulation of any executive department or upon any contract, express, or implied, with the government of the United States; and all claims referred to it by either house of Congress.

Court of Love, in the chivalric period of the middle ages, a court composed of knights, poets and ladies, who discussed and gave decisions on subtle questions of love and gallantry. The first of these courts was probably established in Provence about the twelfth century. They reached their highest splendor in France, under Charles VI, through the influence of his consort Isabella of Bavaria, whose court was established in 1380. An attempted revival was made under Louis XIV. by Cardinal Richelieu.

Court, Presentation at, a formal presentation to the sovereign of Great Britain of persons socially entitled to that distinction. It takes place either at St. James' Palace or Buckingham Palace. The days of presentation are announced some time beforehand.

Courtrai (kör-trā; Flemish, *Kortryk*), a fortified town, Belgium, 28 miles south of Bruges, on the Lys. Here, in 1302, the 'battle of spurs' between the French and Flemings, took place. It is well built, and contains many handsome streets. Pop. 34,564.

Cousin (kö-zan), Victor, a French philosopher and writer, founder of the so-called Eclectic school of philosophy, was born at Paris in 1792; died at Cannes in 1867. He was educated at the Lycée Charlemagne, and entered the École Normale, then newly instituted, in 1811. His mind was directed towards philosophy under Laromiguière, Royer-Collard, and Maine de Biran. In 1815 Royer-Collard, returning to political life, recommended Victor Cousin as his successor, and he became deputy-professor of philosophy at the Sorbonne. He had also an appointment at the Lycée Napoléon, or Collège Henri IV, and at the École Normale. In the free discussions (*conférences*) which followed his prelections he became, by the influence his eloquence exercised over his pupils, the founder of a school which, while assuming an eclectical development, was originally based on the dogmatic teaching of the Scottish school. In 1817 he visited Germany, and became acquainted with the writings of Kant, Fichte, Jacobi and Schelling, by whose opinions his own were thenceforth modified. He lost his position as public teacher on political grounds in 1822, and did not resume teaching till 1828, when he shared with Guizot and Villemain an unexampled popularity, due partly to political feeling. After the July revolution (1830) he entered the Council of Public Instruction, to which he presented valuable reports on the state of public education in Germany and Holland. In the cabinet of Thiers in 1840 he accepted the office of minister of public instruction, and was created a peer of France. The revolution of 1848 brought his public career to a close. The head and founder of the modern school of eclecticism in France, he borrowed from many sources. His eclecticism was based on the principle that every system, however erroneous, which has anywhere commended assent, contains some elements of truth, by which its acceptance may be explained, and that it is the business of philosophical criticism to discover and combine these scattered elements of truth. The following are among his works:—*Fragments Philosophiques* (1826); *Nouveaux Fragments Philosophiques* (1828); *Cours de Philosophie Morale* (1840-41); *Cours de l'Histoire de la Philosophie* (1828); *Histoire de la Philosophie au dix-huitième Siècle* (1829); *De la Métaphysique d'Aristote* (1838); *Philosophie*

Scholastique (1840); *Du Vrai, de Beau et du Bien* (1854), etc.

Cousins (kuz'ns), Samuel, an English engraver, born in 1801; died in 1887. He engraved plates after Lawrence, Landseer, Reynolds, Millais, Leslie, Eastlake, Ward, etc. He was elected a Royal Academician Engraver in 1855, and when this class was abolished he became an Academician proper.

Coutances (kö-täṇs), a town of Northern France, dep. Manche, on a hill about 4 miles from the sea, with which it communicates by a canal. It has a fine old cathedral crowning the hill on which the town stands. Pop. 6599.

Couthon (kö-tōṇ), Georges, a noted French revolutionist, was born in 1756, and was bred to the profession of a lawyer. Some time after the revolution he was chosen a member of the national assembly, and allying himself with Robespierre aided and abetted the latter in all his atrocities. On the downfall of Robespierre's party Couthon shared, along with him and St. Just, in the decree of arrest, and was guillotined, July 28, 1794.

Couvade (kö-väd'), a singular custom prevalent in ancient as well as modern times among some of the primitive races in all parts of the world. After the birth of a child the father takes to bed, and receives the food and compliments usually given elsewhere to the mother. The custom was observed, according to Diodorus, among the Corsicans; and Strabo notices it among the Spanish Basques, by whom, as well as by the Gascons, it is still to some extent practised. Travelers from Marco Polo downwards have met with a somewhat similar custom among the Chinese, the Dyaks of Borneo, the negroes, the aboriginal tribes of North and South America, etc.

Covenant (kov'en-ant), in law, an agreement between two or more parties in writing, signed, sealed and delivered, whereby they agree to do, or not to do, some specified act. In theology, the promises of God as revealed in the Scriptures, conditional on certain terms on the part of man, as obedience, repentance, faith, etc.

Covenant, in Scotch history, the name given to a bond or oath drawn up by the Scottish reformers, and signed in 1557, and to the similar document or Confession of Faith drawn up in 1581, in which all the errors of popery were explicitly abjured. The letter was subscribed by James VI and his council, and all his subjects were required to attach their subscription to it. It was again subscribed in 1590 and 1596. The subscription was renewed in 1638, and the subscribers engaged by oath to maintain religion in the same state as it was in 1580, and to reject all innovations introduced since that time. The *Solemn League and Covenant* was a solemn contract entered into between the General Assembly of the Church of Scotland and commissioners from the English Parliament in 1643, having for its object a uniformity of doctrine, worship and discipline throughout Scotland, England and Ireland, according to the word of God and the example of the best reformed churches. In 1662 it was abjured by act of Parliament, both in England and Scotland.

Covenanters (kuv'en-an-ters), in Scottish history, the name given to the party which struggled for religious liberty from 1637 on to the revolution; but more especially applied to the insurgents, who, after the passing of the act of 1662 denouncing the Solemn League and Covenant as a seditious oath (see above article), took up arms in defense of the Presbyterian form of church government. The Presbyterian ministers who refused to acknowledge the bishops were ejected from their parishes and gathered round them crowds of their people on the hillsides, or any lonely spot, to attend their ministrations. These meetings, called 'conventicles,' were denounced as seditious, and to frequent them or to hold communication with those frequenting them was forbidden on pain of death. The unwarrantable severity with which the recusants were treated provoked them to take up arms in defense of their opinions. The first outbreaks took place in the hill country on the borders of Ayr and Lanark shires. Here at Drumclog, a farm near Loudon Hill, a conventicle was attacked by a body of dragoons under Graham of Claverhouse, but were successful in defeating their assailants (1679). The murder of Archbishop Sharp on Magus Moor, and this defeat, alarmed the government, which sent a large body of troops under the command of the Duke of Monmouth to put down the insurgents, who had increased in number rapidly. The two armies met at Bothwell Bridge, where the Convenanters were totally defeated (June 22, 1679). In consequence of the rebellious protest called the *Sanquhar Declaration*, put forth in 1680 by Cameron, Cargill and others, as representing the more irreconcilable of the Covenanters (known as Cameronians), and a subsequent proclamation in 1684,

the government proceeded to more severe measures. An oath was now required of all who would free themselves of suspicion of complicity with the Covenanters; and the dragoons who were sent out to hunt down the rebels were empowered to kill anyone who refused to take the oath. During this 'killing time,' as it was called, the sufferings of the Covenanters were extreme; but notwithstanding the great numbers who were put to death, their fanatic spirit seemed only to grow stronger. Even after the accession of William some of the extreme Covenanters refused to acknowledge him, owing to his acceptance of episcopacy in England, and formed the earliest dissenting sect in Scotland. See *Cameron* (*Richard*), and *Reformed Presbyterians.*

Covent Garden (kuv'ent; that is, *convent garden*), a market place in London, which formerly consisted of the garden belonging to the abbot and monks of Westminster. In 1831 the present market buildings were erected by the Duke of Bedford, the proprietor of the ground.—COVENT GARDEN THEATER sprang out of one in Lincoln's-Inn-Fields, through a patent granted to Sir W. Davenant in 1662. It is associated with the names of Kemble, Siddons, Macready, etc.

Coventry (kuv'en-tri), a city of England, county of Warwick, 85 miles northwest of London. It was formerly surrounded with lofty walls and had twelve gates, and was the see of a bishop early conjoined with Lichfield. Parliaments were convened here by the earlier monarchs of England, several of whom occasionally resided in the place. Pageants and processions were celebrated in old times with great magnificence, and a remnant of these still exists in the processional show in honor of Lady Godiva. (See *Godiva.*) There are still a few narrow and irregular streets, lined with houses in the style of the fifteenth and sixteenth centuries. There are several fine churches. Coventry is the center of the ribbon trade, and silk-dyeing, watchmaking, and art metal work are staple lines of business. Pop. 106,377.

Coventry, a town of Kent Co., Rhode Island, 18 miles S. W. of Providence. It has manufactures of cotton and woolen goods, etc. Pop. 5670.

Cove of Cork. See *Queenstown.*

Coverdale (kov'er-dāl), MILES, the earliest translator of the Bible into English, was born in Yorkshire in 1487; died in 1568. He was educated at Cambridge and was ordained priest in 1514. He was led some years afterwards to embrace the reformed doctrines, and, having gone abroad, assisted Tindall in his translation of the Bible. In 1535 his own translation of the Scriptures appeared, with a dedication to Henry VIII. Coverdale was almoner to Queen Catharine Parr, and officiated at her funeral. In 1551, during the reign of Edward VI, he was appointed Bishop of Exeter, but was ejected on the accession of Mary, and thrown into prison. After two years' confinement he was liberated, and proceeded first to Denmark, and subsequently to Geneva, where he was employed in preparing the Geneva translation of the Scriptures. On the accession of Elizabeth he returned to England, and held for a short time the rectory of St. Magnus, London Bridge.

Coverture (kov'ėr-tūr), a legal term applied to the position of a woman during marriage, because she is under the cover or protection of her husband.

Covilhao (kō'vēl-youn), a town of Castello Branco, Portugal, on the S. E. slope of the Sierra da Estrella. It has cloth factories, etc. Pop. 15,745.

Covington (kuv'ing-ton), a city, one of the county seats of Kenton Co., Kentucky, on Ohio River, opposite Cincinnati, to which it is connected by bridges. It has a very large general trade and manufacturing business, its industries including many cigar and tobacco factories, steel, iron and glass works, etc. It is noted for its beautiful buildings, including the Roman Catholic Cathedral, Federal Building, etc. Pop. (1910) 53,270; (1920) 57,121.

Covington, a town, county seat of Alleghany Co., Virginia, on Jackson River, 55 miles N. W. of Lynchburg. It has large paper and pulp mills, foundry, tannery, etc. Pop. 5623.

Cow (kou), the general term applied to the females of the genus *Bos* or ox, the most valuable to man of all the ruminating animals. Among the best breeds of dairy cows in the United States are the Dutch Belted, Holstein, Jersey, Guernsey, Shorthorn, Ayrshire, Devon and some breeds of Durham. The Jersey, Guernsey, and Shorthorn are valued as dairy cows, while the Holstein, though an enormous milk producer, from its large size is classed among the beef-producing breeds as the Durham. See *Ox.*

Cowbane (kou-bān), or water-hemlock, *Cicūta virōsa,* a perennial, umbelliferous, aquatic plant, producing an erect, hollow, much-branched, striated stem, 3 or 4 feet high, with dissected leaves. It is highly poisonous.

Cowberry, the *Vaccinium Vitis idæa*, the red whortleberry, a procumbent shrub of high moorlands in Europe, Asia and North America. It has evergreen, box-like leaves, and produces a red acid berry used for jellies and preserves. Named cowberry because in parts of Scotland the berries are used to thicken milk by being rubbed on the inside of milk-pails.

Cowbird (*Molothrus ater*), a common bird of North America, larger than the English sparrow and belonging to the family *Icteridæ*, the American starlings and blackbirds. Like the European cuckoo the cowbird builds no nest, but places its eggs in the nests of smaller birds, one egg in each nest so used, to be hatched by the rightful owner of the nest and fed as its own offspring, the young parasite crowding the others out of the nest, or reaching all the food. Gregarious and migratory it in the regions winters in the far southern states and nests generally north of Virginia and in mountain sections farther south. The name cowbird is derived from its habit of frequenting pastures and perching on and about the cattle.

COWBIRD
Young being fed by Yellow-throat.

Cowboys, a term first used during the American Revolution, applied to a band of Tories who infested the neutral ground of Westchester County, New York, stealing cattle from both parties and doing other mischief. It has been used of recent years to designate the skilled horsemen who have charge of the cattle on the great ranges of the West. Many of them enlisted in the Rough Rider regiments of the Spanish war and proved daring soldiers.

Cowen (kou'en), Frederick Hymen, musical composer, born at Kingston, Jamaica, in 1852. Among his works are *Rose Maiden*, *St. Ursula* and *Sleeping Beauty*, cantatas; *Pauline*, opera; *The Deluge*, oratorio; and many popular songs.

Cowes (kouz), a seaport town and watering place in Hampshire, England, on the north coast of the Isle of Wight, at the mouth of the river Medina. It is well known as a yachting port. Pop. 9635.—East Cowes, on the opposite side of the river, is connected with it by a steam ferry and floating bridge. Pop. 4660.

Cowgrass. See *Cowpea*.

Cowitch, or Cowhage (kou'ich, kou'aj; Hind, *kiwanch*), the hairs of the pods of leguminous plants, genus *Mucūna*, natives of the East and West Indies. The pod is covered with a thick coating of short, stiff, brittle, brown hairs, the points of which are finely serrated. They easily penetrate the skin, and produce an intolerable itching. They are employed medicinally (being taken in honey or syrup) as a mechanical vermifuge.

Cowley (kou'li), Abraham, an English poet of great celebrity in his day, was born at London in 1618; died in 1667. He published his first volume, *Poetic Blossoms*, at the age of fifteen. He entered Trinity College, Cambridge, in 1636, but was ejected as a royalist in 1643, and removed to St. John's College, Oxford. He engaged actively in the royal cause, and when the queen was obliged to quit England, Cowley accompanied her. He was absent from his native country nearly ten years, and it was principally through him that the correspondence was maintained between the king and queen. On the restoration he returned with the other royalists, and obtained the lease of a farm at Chertsey, held under the queen, by which his income was about £300 per annum. Cowley's poems have failed to maintain their ancient popularity, but he still holds a high position as a prose writer and as an essayist. He took a considerable interest in science, and was one of the founders of the Royal Society. His chief works are: *Love's Riddle*, a pastoral comedy; *Davideis*, a scriptural epic; *Naufragium Joculare; The Mistress*, a collection of love verses; *Pindarique Odes*, *Liber Plantarum*, etc.

Cowloon (kou'lōn), Kowloon, or Kaulun, a peninsula at the mouth of the Canton River, directly opposite to the island of Hong-Kong, to which crown colony it belongs.

Cow-parsnip, an umbelliferous plant, genus *Heracleum*, one species of which, *H. Sphondylium*, found in moist woods and meadows in England, grows to the height of 4 or 5 feet, and is used to feed to pigs. Siberian cow-parsnip (*H. gigantēum*) is grown in gar-

dens and shrubberies, reaching the height of 10 or 12 feet. *H. landtum* is a common United States species.

Cowpea, COWGRASS, *Trifolium medium*, a variety of clover cultivated in England and some parts of the United States for the same purpose as the common red clover (*T. pratense*).

Cowper (kō'pėr or kou'pėr), WILLIAM, an English poet, born at Berkhampstead in 1731; died at East Dereham, in Norfolk, in 1800. He was the son of a clergyman; lost his mother at the age of six, and was, when ten years of age, removed from a country school to that of Westminster, which he left at eighteen with a fair reputation for classical learning, and a horror of the school discipline, which he afterwards expressed in his *Tirocinium*. He was then apprenticed for three years to a solicitor, where he had for a fellow clerk Mr., afterwards Lord Thurlow. At the expiration of his apprenticeship he took chambers in the Middle Temple, and in 1754 was called to the bar. The interest of his family procured for him the post of clerk to the House of Lords; but having to appear for examination at the bar of the house, his nervousness was such that on the very day appointed for the examination he resigned the office, and soon after became insane. From December, 1763, to June, 1765, he remained under the care of Dr. Cotton at St. Albans. The skill and humanity of that gentleman restored him to health, and he retired to Huntingdon. Here he made the acquaintance of the Rev. Mr. and Mrs. Unwin, whose kindness, particularly that of the latter, seemed to have the most soothing and beneficial influence on him. On the death of Mr. Unwin, in 1767, he removed with Mrs. Unwin to Olney, the residence of the Rev. John Newton, who also became an intimate friend and exercised a powerful influence over his mind and conduct. Newton had resolved on publishing a volume of hymns, and secured the cooperation of Cowper in composing them, but before their publication in 1776 he had been again attacked by his constitutional malady, by which, for ten years from 1773, his mind, with occasional intervals of recovery, was continually clouded. In 1776, by Mrs. Unwin's advice he commenced a poem on the *Progress of Error*, which he followed by three other poems, *Truth*, *Table Talk* and *Expostulation;* these with several others were published in a volume in 1782. Another female friend, Lady Austen, suggested the *Task*, which, together with *Tirocinium*, formed a second volume in 1785. *The History of John Gilpin* is also due to the suggestion of Lady Austen. The translation of *Homer*, begun in 1784, occupied him for the next six years, and was published in 1791. He removed during its progress, in 1786, from Olney to Weston. In the beginning of 1794 he was again attacked with madness, which was aggravated by the death of Mrs. Unwin in 1796. The revisal of his *Homer*, and the composition of some short pieces, occupied the latter years of his life. He is considered among the best of English descriptive poets, and is one of the most easy and elegant of letter-writers.

Cowpox, the vaccine disease which appears on the teats of the cow, in the form of vesicles of a blue color, approaching to livid. These vesicles are elevated at the margin and depressed at the center; they are surrounded with inflammation and contain a limpid fluid. This fluid or virus is capable of communicating genuine cowpox to the human subject, and of protecting against smallpox either completely or, at least, against the virulent form of the disease. See *Vaccination*.

Cowrie-pine (kou'ri). See *Kauri*.

Cowrie-shell, a small gasteropodous shell, the *Cypræa monēta*, used for coin in some parts of Africa and in many parts of Southern Asia. The beauty of the cowrie-shells has procured them a place among ornaments, and they have been in demand among civilized and uncivilized nations since prehistoric times. The shells used as currency occur principally in the Philippine Islands. They vary in value in different localities. In India 6000 to 7000 are equal to a rupee, while in the interior of Africa 200 are worth 16c. The name is also given to other shells of the genus *Cypræa*.

Cowslip (kou'slip), the popular name of several varieties of *Primŭla veris*, order Primulaceæ, a fragrant and pretty wildflower found in pastures and meadows. It has umbels of small, buff-yellow, scented flowers on short pedicels. Its flowers possess sedative properties, and have been used as an anodyne, a sort of wine being prepared from them.

Cow-trees, a name of various trees having an abundance of milky juice, especially *Brosimum Galactodendron*, a South American tree, order Artocarpaceæ (breadfruit), which, when wounded, yields a rich, milky, nutritious juice in such abundance as to render it an important article of food. This fluid resembles in appearance and quality the milk of the cow. The tree is common in Venezuela, growing to the height of

100 feet, with leathery leaves. It yields a form of milk.

Cox, DAVID (1783-1859), an English landscape painter, born in Birmingham. His works are chiefly of English landscape, and in water colors. In later life he painted a great deal in oil.

Cox, SIR GEORGE WILLIAM (1827-1902), an English writer; author of *Mythology of the Aryan Nations*, etc.

Cox, JACOB DOLSON (1828-1900), an American soldier and statesman, born in Montreal, Canada. He was graduated from Oberlin College in 1851. During the Civil war he attained the rank of major-general. He was governor of Ohio 1866-67, and secretary of the interior in Grant's cabinet, 1869-70. He wrote *The March to the Sea*, etc.

Cox, JAMES MIDDLETON (1870-), an American newspaper proprietor and politician, born at Jacksonburg, Ohio. He entered newspaper work as a reporter, and later became secretary to Congressman Paul Sorg. Returning to newspaper work he bought the Dayton *Times*, renaming it the *News*, and 5 years later bought the Springfield *Press-Republic*, renaming it also the *News*. He succeeded Sorg as Representative, serving in the 61st and 62d Congresses. In 1912 he was elected governor of Ohio, and again in 1916 and 1918. While governor he obtained the adoption of the budget system, a revised school code, and other progressive measures. In 1920 he was the Democratic nominee for President, but was defeated by Warren G. Harding.

Cox, KENYON (1856-1919), an American painter, born at Warren, Ohio. He became noted as an illustrator, but gradually devoted himself to mural painting. Examples of his work are in the Library of Congress, Iowa State House, and elsewhere. He was elected a member of the National Academy of Design in 1903.

Cox, PALMER (1840-), artist and author, born at Granby, Quebec. He removed to California and later to New York. He is best known for his *Brownie Books*, with their numerous illustrations.

Cox, SAMUEL SULLIVAN (1824-89), (known familiarly as 'Sunset' Cox, a nickname derived from a descriptive article he wrote), an American politician, born in Zanesville, Ohio. He represented Ohio in Congress 1856-65, and was congressman from New York for 20 years, 1869-89.

Coyote (kī-ō'te; or kī'ot), the prairie or barking wolf of N. America (*Canis latrans*). It is native to the plains west of the Mississippi, and is a small species, though considerably larger than the fox. It is found as far south as Costa Rica.

Coypel (kwȧ-pel), NOEL, a French painter, born in 1628 or 1629; died in 1707, at Paris. He adorned the old Louvre and the Tuileries, and painted some fine pictures for the council hall of Versailles.—His son ANTOINE (1661-1721) was highly distinguished both as a painter and an engraver.

Coypou, COYPU (koi'pŏ), the native name of a South American rodent mammal, the *Myopotāmus coypus*, about the size of and considerably resembling a beaver. Its limbs are short, its tail in part bare and scaly, and it swims with great ease, its hind feet being webbed. It inhabits burrows by the banks of streams. It is valued for its fur (called *nutria* fur). Length when full grown, about 2 feet 6 inches.

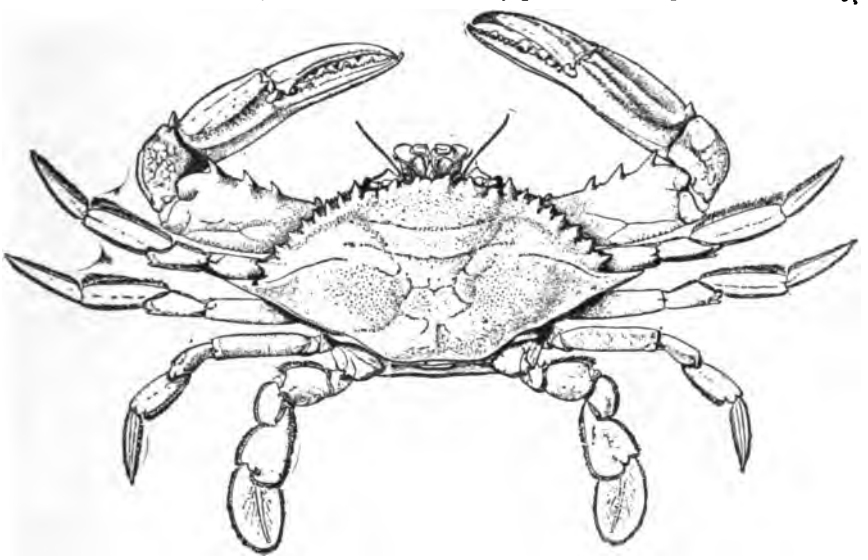
Coysevox (k w ȧ s-v ō), ANTOINE, a French sculptor, born in 1640; died in 1720. Among his best works are an equestrian statue of Louis XIV; a statue of Cardinal Mazarin; the tomb of Colbert; the group of *Castor and Pollux;* the *Sitting Venus; Nymph of the Shell; Hamadryad; Faun with the Flute;* and *Pegasus and Mercury.*

Cozumel (kō-sụ-mel'), an island in the Caribbean Sea, off the coast of Yucatan.

Cozzens (kuz'enz), FREDERICK SWARTWOUT, author, born in New York in 1778; died in 1869. He is especially known for his *Sparrowgrass Papers*, and wrote other works in prose and verse.

Crab, a popular name for all the ten-footed, short-tailed crustaceans constituting the suborder Brachyura, order Decapoda, comprising many genera, distinguished from the lobster and other macrurous or long-tailed decapods by the shortness of their tail, which is folded under the body. The head and breast are united, forming the cephalothorax, and the whole is covered with a strong carapace. The mouth has several pairs of strong jaws, in addition to which the stomach has its internal surface studded with hard projections for the purpose of grinding the food. The stomach is popularly called the 'sand-bag'; a little behind it is the heart, which propels a colorless lymph (the blood) to the gills ('dead man's fingers'). The liver is the soft, rich, yellow substance usually called the *fat* of the crab. Crabs 'molt,' or throw off their calcareous covering, periodically. The first pair of limbs is not used for locomotion, but is furnished with strong

claws or pinchers. The eyes are compound, with hexagonal facets, and are pedunculated, elongated and movable. Like most individuals of the class, they easily lose their claws, which are as readily renewed. They generally live on decaying animal matter, though others live on vegetable substances, as the racer-crabs of the West Indies, which suck the



Common Edible or Blue Crab (*Cancer pagurus*).

juice of the sugar-cane. Most inhabit the sea, others fresh water, and some the land, only going to the sea to spawn. Of the crabs, several species are highly esteemed as an article of food, and the fishery constitutes an important trade on many coasts. The common large edible crab (*Cancer pagurus*) is common on our shores, and is much sought after. See also *Hermit-crab*, *Land-crab*, *Pea-crab*.

Crab, a name given to various machines, especially to a kind of portable windlass or machine for raising weights, etc. Crabs are much used in building operations for raising stones or other weights, and in loading and discharging vessels.

Crab-apple (*Pyrus Malus*), a small wild, very sour variety of the apple; also any sour or uncultivated species or variety. See *Apple*.

Crabbe (krab), GEORGE, an English poet, born at Aldborough, Suffolk, in 1754; died at Trowbridge, Wilts, in 1832. Having been educated for the medical profession, he settled as a surgeon and apothecary in his native village, but soon finding his practice insufficient to afford him a livelihood, he resolved to try his fortune as littéreteur in London. He obtained the friendship and assistance of Burke, published his poem the *Library*, and soon after entered the church. He was appointed domestic chaplain to the Duke of Rutland, and afterwards obtained ample preferment. In 1783 appeared the *Village*, which was followed two years afterwards by the *Newspaper*. The *Parish Register* appeared in 1807. The *Borough* appeared in 1810, and was followed, in 1812, by *Tales in Verse*, and in 1819 by *Tales of the Hall*. The later years of Crabbe's life were spent in the peaceful discharge of his professional duties at Trowbridge in Wiltshire, a living which he had received in 1814. His poems are all characterized by homely truthfulness, simplicity and pathos.

Cracklin (krak'lin), a species of chinaware which is ornamented by a network of small cracks in all directions. The ware receives the small cracks in the kiln, with the effect that the glaze or enamel which is afterwards applied appears to be cracked all over.

Cracow (krā'kō; Polish *Krakou*), a city of S. W. Poland, on the Vistula, 160 miles S. W. of Warsaw. It was the ancient capital of Poland and residence of the Polish kings, and was for a time a republic, 1815-46. It was included in the Austrian crown land of Galicia until the end of the World war (1918) which resulted in the disruption of Austria-Hungary and the re-establishment of Poland. (See *European War.*) Its fine old Gothic cathedral has monuments of Kosciusko and the Polish kings. The university was founded in 1364; it has a library of 300,000 volumes. It has manufactures of machinery, textiles, etc., and a large trade in grain, timber, etc. Pop. (1920 estimate) 170,000.

Craddock, CHARLES EGBERT, pseudonym of Mary N. Murfree (*q. v.*).

Cradock (kra'dok), SIR CHRISTOPHER (1862-1914), a British rear admiral, commander of the Atlantic fleet. He went down with his flag ship, the *Good Hope*, in a battle with the German squadron off Coronel, Chile, November 1, 1914.

Crafton (kráf'ton), a borough of Allegheny Co., Pennsylvania, adjoining Pittsburgh, in a coal and oil region. It has some manufactures. Pop. 5954.

Crafts, WILBUR FISK (1850-), an American clergyman and author, born at Fryeburg, Maine, educated at Wesleyan University and Boston University Theological School. He was pastor of Methodist Episcopal and Presbyterian churches. Author of *The Ideal Sunday School, Talks to Boys and Girls About Jesus, Practical Christian Sociology*, etc.

Crag and Tail, CRAIG AND TAIL, in geology a name applied to a hill formation common in Britain, in which a bold and precipitous front is presented to the west or northwest, while the opposite side is formed of a sloping declivity.

Craig (krāg), JOHN, a Scottish reformer, born in 1512; died in 1600. He became Knox's colleague in Edinburgh, refused to publish the banns between Mary and Bothwell, assisted in drawing up the *Second Book of Discipline*, and compiled the *National Covenant*, signed by the king in 1580.

Craig, SIR THOMAS, a Scottish writer on jurisprudence, was probably born in the year 1538; died in 1608. He was educated at the University of St. Andrews, and afterwards repaired to France, where he studied civil and canon law. He returned about the year 1561, and was placed at the head of the criminal judicature of the country as justice depute. He is now chiefly remembered by his *Treatise on Feudal Law.*

Craik (krāk), DINAH MARIA, an English novelist, born at Stoke-upon-Trent in 1826, her father's name being Mulock. She became the wife of George Lillie Craik (a nephew of the subject of next article) in 1865. She published a volume of poems under the title of *Thirty Years;* many essays and papers on ethical and domestic subjects; books for young people, and about twenty-four novels, the best of which are: *John Halifax, Gentleman; A Life for a Life, Agatha's Husband* and *The Woman's Kingdom.* She died in 1887.

Craik, GEORGE LILLIE, a miscellaneous writer, who was born in Fifeshire in 1799, and died at Belfast, June 25, 1866. He was an extensive contributor to the *Penny Cyclopædia* in the departments of history and biography. His first independent work of any importance was his *Pursuit of Knowledge under Difficulties* (1830-31). Other works were: *Romance of the Peerage; Spenser and his Poetry; History of Literature and Learning in England*, afterwards recast into *History of English Literature and the English Language; History of English Commerce; English of Shakespere; Bacon, his Writings and Philosophy; etc.* In 1849 he was appointed professor of English literature in Queen's College, Belfast, an appointment which he held till his death.

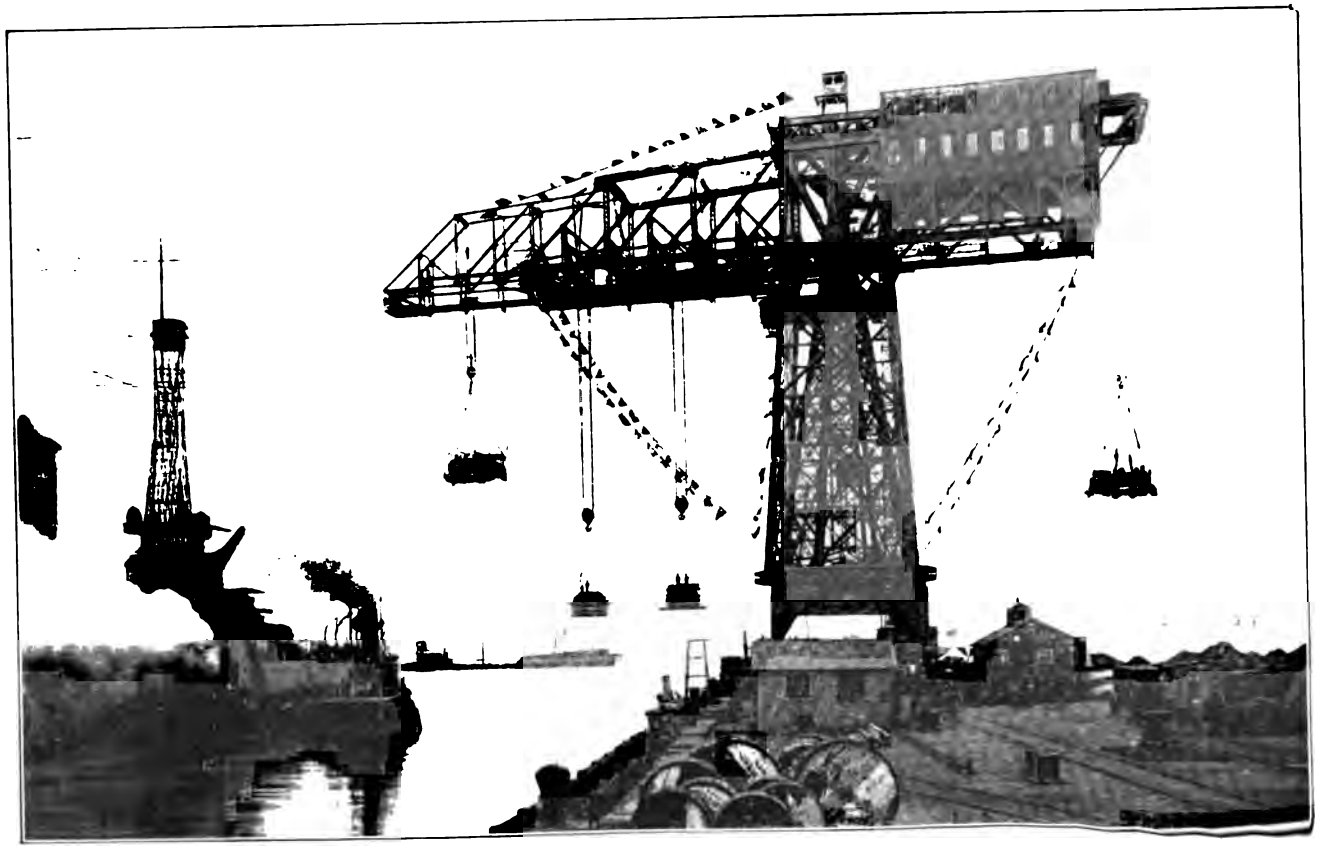
Crail (krāl), a royal and parliamentary burgh and seaport of Scotland, in Fifeshire. It is a very ancient burgh, and has remains of a priory college and ruins of an old castle once a royal residence. Pop. 1145.

Crake. See *Corncrake.*

Crambe, a genus of cruciferous plants, natives of Europe and Asia. They are perennial herbs, with stout, branched stems and broad leaves. One species, *C. maritima*, known as seakale, is a native of the sandy and shingly coasts of Britain.

Cramp (kramp), a variety of spasm, or sudden, involuntary and painful contraction of a muscle or muscles. It is usually caused by sudden change of temperature, as in bathing, exposure to cold, over-exertion of the muscles, rheumatism or the bringing into action of muscles unaccustomed to exercise. See also *Writer's Cramp.*

Cranach, KRANACH (krá'nâh), LUCAS, a German painter born in 1472; died in 1553. He was patronized by Frederick of Saxony, and



THE GREAT 350-TON CRANE AT THE PHILADELPHIA NAVY YARD

Probably the largest crane in the world; total weight, 3750 tons. It is of the revolving hammerhead type and has a clear lift above pier of 141 feet. Used at wet docks for fitting out ships. Note the suspended locomotives, which look like toys. The two main hooks have a capacity of 175 gross tons each. It was built by the McMyler Interstate Company.

accompanied him in his pilgrimage to Jerusalem. On the commencement of the Reformation movement he became the intimate friend of Luther and Melanchthon, whose portraits, as taken by him, are among the most interesting memorials of the age. His works, chiefly portraits and historical subjects, are numerous and much prized.—His son LUCAS (died 1586) also gained great distinction as a painter.

Cranberry (kran'bėr-ĭ), the fruit of *Oxycoccus palustris*, nat. order Vacciniaceæ (whortleberries), a native of Europe, North Asia and North America. It is also called *Mossberry* or *Moorberry*, as it grows only on peatbogs or swampy land, usually among masses of sphagnum. The berry, when ripe, is globose and dark red, and a little more than ¼ inch in diameter. These berries form a sauce of exquisite flavor, and are used for tarts. The American cranberry, a native of Canada and the United States is the *O. macrocarpus*. It has larger berries than the European species, and is extensively cultivated in some localities. *Vaccinium Vitis idæa*, the cowberry, is often called the cranberry in Scotland.

Cranbrook (kran'bruk), a small town of England, County Kent, 40 miles S. E. of London, where the first woolen manufactory in England was established by the Flemings in the reign of Edward III. Pop. 13,689.

Crane (krān), the common name of birds of the genus *Grus*, order Grallæ, or Grallatores. They are generally of considerable size, and remarkable for their long necks and stilt-like legs, which eminently fit them for living in marshes and situations subject to inundations, where they usually seek their food. This is partly of vegetable matter, but they also devour insects, worms, frogs, lizards, reptiles, small fish and the spawn of various aquatic animals. They build their nests among bushes or upon tussocks in marshes, and lay but two eggs. Cranes annually migrate to distant regions, and perform voyages astonishing for their great length. The common crane (*Grus cinerĕa*) has the general plumage ash-gray, the throat black, the rump ornamented with long, stiff and curled feathers, the head with bristly feathers; legs black; length about 4 feet. It inhabits Europe, Asia and the north of Africa. The crowned crane (G. *pavonina*, or *Balearica pavonina*) has the general plumage bluish ash-gray, the tail and primary quills black, the wing-coverts pure white; the head is crowned with a tuft of slender yellow feathers, which can be spread out at pleasure. It inhabits North and West Africa. The demoiselle crane (*Anthropoides virgo*) is so called from the elegance of its form. It is ash-gray, and

Crowned Crane (*Balearica pavonina*).

the head is adorned with two tufts of feathers formed by a prolongation of the ear-coverts. Its habitat is Africa and the south of Europe. Among North American species are the whooping crane (*G. Americāna*), a larger species than the common crane, and the brown or sand-hill crane (*G. Canadensis*).

Crane, a hoisting appliance which in its various forms is capable of both lifting a load and transporting it laterally. The most widely applied type of crane is the overhead traveling crane, known also as bridge crane. In large shops, where heavy loads are frequent, a lifting capacity of over 100 tons is common.—*Jib cranes* are of cantilever construction, and are used for hoisting purposes in yards.

Crane, STEPHEN, author, born at Newark, New Jersey, in 1870; died in 1900. His *Red Badge of Courage*, a romance of the Civil war, attracted wide attention in Great Britain and America. He was a correspondent in the Græco-Turkish and Spanish-American wars.

Crane, WALTER, English artist, was born in Liverpool, 1845; died March 15, 1915. He was associated with William Morris in the movement to bring about a revival of the decorative arts and crafts in England. Among his works are *The Bridge of Life*, *The Chariots of the Hours*, *Later Summer*. He illustrated Spenser's *Faerie Queene* and *Shepherd's Calendar* and several of Shakespeare's plays. Some of his designs for tapestry are notable, among them *The Goose Girl*. The Albert gold medal of the Society of Arts was awarded to him in 1904.

Crane-fly, a genus of two-winged (dipterous) insects (*Tip-*

ida), remarkable for the length of their legs. *Tipula oleracea* is the well-known Daddy-long-legs, whose larva is very destructive to the roots of grain crops, etc.

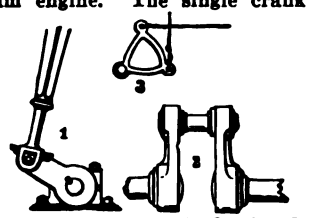
Crane's-bill, the typical genus of the order Geraniaceæ. Many species are American plants; some are mere weeds, others extremely showy. See *Geranium*.

Cranganore (kran'ga-nōr), a town in Hindustan, presidency of Madras, state of Cochin, on the Malabar coast. Pop. 9475. It is the traditional field of St. Thomas' labors in India. Jews have been settled here since the fourth century; and it is certain the Syrian church was established before the ninth.

Craniology (krā-ni-ol'ō-gi), the science which investigates the structure and capacity of the skull in various animals. It is sometimes also used as synonymous with *phrenology*. See *Phrenology*.

Cranium (crā'ni-um). See *Skull*.

Crank, an iron axis with the end bent like an elbow, serving as a handle for communicating circular motion; as, the *crank* of a grindstone; or for changing circular into longitudinal motion, as in some sawmills, or longitudinal into circular motion, as in a steam engine. The single crank (1)



1, Single Crank. 2, Double Crank. 3, Bell Crank.

can only be used on the end of an axis. The double crank (2) is employed when it is necessary that the axis should be extended on both sides of the point at which the reciprocating motion is applied. An exemplification of this arrangement is afforded by the machinery of steamboats. The bellcrank (3), so called from its being much used in bell-hanging, is for a totally different purpose to the others, being used merely to change the direction of motion, as from a horizontal to a vertical line.

Cranmer (kran'mėr), Thomas, Archbishop of Canterbury, and famous for the part he played in the English reformation during the reign of Henry VIII; born at Aslockton, Notts, in 1489; executed by burning at Oxford in 1556. He entered as a student of Jesus College, Cambridge, in 1503, took the degree of M.A., obtained a fellowship, and in 1523 was chosen reader of theological lectures in his college, and examiner of candidates for degrees in divinity. An opinion which he gave on the question of Henry VIII's proposed divorce from Catharine brought him under the favorable notice of the king. Cranmer was called to court, made a king's chaplain, and commanded to write a treatise on the subject of the divorce. In 1530 he was sent abroad with others to collect the opinions of the divines and canonists of France, Italy and Germany, on the validity of the king's marriage. At Rome he presented his treatise to the pope, but his mission was fruitless. In January, 1533, he was appointed Archbishop of Canterbury. Soon after he set the papal authority at defiance by pronouncing sentences of divorce between Henry and Catharine, and confirming the king's marriage with Anne Boleyn. The pope threatened excommunication, and an act of Parliament was immediately passed for abolishing the pope's supremacy, and declaring the king chief head of the Church of England. The archbishop zealously promoted the cause of the Reformation; and through his means the Bible was translated and read in churches, and monastic institutions were vigorously suppressed. In 1536 he pandered to Henry's passions by promoting the divorce of Anne Boleyn. This and other services secured him in the king's favor, who appointed him by will one of the council of regency to Edward VI. By his instrumentality the liturgy was drawn up and established by act of Parliament, and articles of religion were compiled, the validity of which was enforced by royal authority, and for which infallibility was claimed. The exclusion of the Princess Mary from the crown, by the will of her brother, was a measure in which Cranmer joined the partisans of Lady Jane Grey, apparently in opposition to his own judgment. With others who had been most active in Lady Jane's favor he was sent to the Tower on the accession of Mary. He was tried on charges of blasphemy, perjury, incontinence and heresy, and was sentenced to be degraded and deprived of office. After these flattering promises were made, which induced him to sign a recantation of his alleged errors, and become, in fact, a Catholic convert. But when he was brought into

St. Mary's Church, Oxford, to read his recantation in public, instead of confessing the justness of his sentence, and submitting to it in silence or imploring mercy, he calmly acknowledged that the fear of death had made him belie his conscience; and declared that nothing could afford him consolation but the prospect of extenuating his guilt by encountering, as a Protestant penitent, with firmness and resignation, the fiery torments which awaited him. He was immediately hurried to the stake, where he behaved with the resolution of a martyr.

Crannogs (kran'ogs), the name given in Ireland and Scotland to the platforms supported by piles in lakes, which were in use as dwelling-places and places of refuge among the old Celts. See *Lake Dwellings*.

Crantara (kran'ta-ra; Gael, *creantarigh*), the fiery cross, an ancient Gaelic rallying symbol, the neglect of which implied infamy.

Cranston (krans'ton), a town (township) of Providence Co., Rhode Island, W. of Narragansett Bay. Contains several manufacturing villages, reform schools, State prison, etc. Pop. (1910) 21,107; (1920) 29,407.

Crape (krāp), a light, transparent stuff, like gauze, made of raw silk, gummed and twisted on the mill, woven without crossing, and much used in mourning and dressmaking.

Crashaw (kra'shą), RICHARD, an English poet, born in London in 1613; died in 1649; educated at the Charterhouse and at Cambridge. In 1637 he became a fellow of Peterhouse, and having been admitted to orders was noted as an eloquent and powerful preacher. In 1644 he was ejected from his fellowship by the Parliamentarians, and proceeded to Paris, where he became a convert to the Roman Catholic faith, and was appointed to a canonry at Loretto. *Epigrammata Sacra* appeared in 1634; *Steps to the Temple, Sacred Poems, with other Delights of the Muses*, was published in London in 1646; and a posthumous volume appeared at Paris in 1652, under the title *Carmen Deo Nostro*. Crashaw displays considerable poetic genius in the treatment of religious subjects, and though his works are now almost forgotten, they are said to have furnished hints to both Milton and Pope.

Crassulaceæ (kras-u-lā'se-ē), the houseleek family, a nat. order of polypetalous exogens. It consists of succulent plants, with herbaceous or shrubby stems, and annual or perennial roots, growing in hot, dry, exposed places in the more temperate parts of the world, but chiefly South Africa. Many species of *Crassula*, *Sempervivum*, *Sedum*, etc., are cultivated in greenhouses for the beauty of their flowers. The genus *Sedum* is the most largely represented in the United States.

Crassus (cras'us), MARCUS LICINIUS, the Roman triumvir, surnamed *Dives* (the rich), on account of his vast riches, was born about B.C. 115; died in B.C. 53. He took part with Sulla in the Civil war; and as prætor, in B.C. 71, he defeated Spartacus and the revolted slaves at Rhegium. In B.C. 70 he was elected consul, having Pompey as his colleague; and in B.C. 60 Cæsar, Pompey and Crassus formed the first triumvirate. Five years later he again became consul, and obtaining Syria for his province he made war on the Parthians, but was defeated and slain. It is said that when his head was sent to Orodes, the Parthian king, he caused melted gold to be poured into the mouth, in scorn of his notorious love of wealth.

Cratægus (kra-tē'gus), the hawthorn genus of plants.

Crater (krā'tėr), the orifice or mouth of a volcano. Craters may be central or lateral, and there may be several subsidiary ones, which may shift their places, or become merged by subsidence into others.

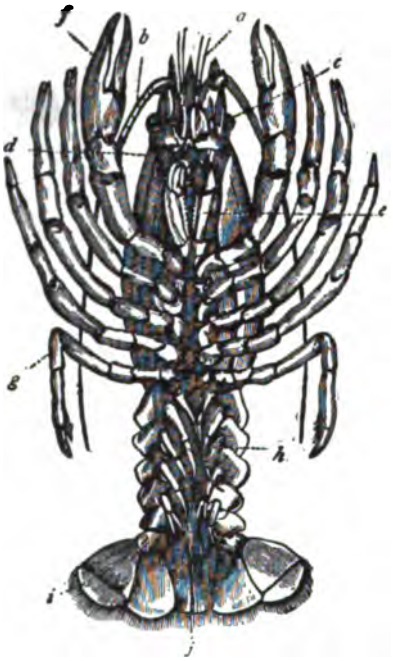
Cratinus (kra-tī'nus), an Athenian comic poet to whom the invention of satirical comedy is attributed; died in B. C. 422 at the age of 97.

Cravat (kra-vat'), a necktie or neckcloth usually worn by men; so called from Fr. *Cravate*, a Croat, because this piece of dress was adopted in the eleventh century from the Croats who entered the French service.

Crater Lake National Park, a United States government reservation of 159,360 acres in the Cascade Mountains, Oregon. Crater Lake (20¼ sq. m.) lies in the crater of an extinct volcano. Wizard Island, in the lake, is an extinct volcanic cone.

Crawfish, or CRAYFISH (krą'fish, krā'fish), a name of various crustaceous animals, the common crawfish being *Astăcus fluviatilis*, the river lobster, a macrurous (long-tailed), ten-footed crustacean, resembling the lobster in appearance and habits. It inhabits the fresh waters of Europe and the north of Asia, and is common in some of the streams of England. It lurks under stones or in holes in the

banks. Its food consists of small molluscs or fishes, the larvæ of insects, and almost any sort of animal matter. In



The Common Crawfish (*Astacus fluviatilis*), viewed from below. *a*, Antennules; *b*, Large antennæ; *c*, Eyes; *d*, Opening of auditory sac; *e*, Last pair of foot-jaws; *f*, One of the great chelæ; *g*, Fifth thoracic limb; *h*, Swimmerets; *i*, The last pair of swimmerets; *j*, The opening of the anus below the telson.

the United States crawfish of the genus *Astacus* and *Cambărus* occur. Some of them by their burrowing habits injure mill-dams and the levees of the Mississippi.

Crawford (krą'furd), FRANCIS MARION, son of the following, was born in Italy in 1854, and studied philosophy and languages at Cambridge, Heidelberg, Carlsruhe and Rome before embarking in fiction, in which he was both prolific and highly successful. His first novel, *Mr. Isaacs*, attracted much attention and was followed by numerous others. He also did some good historical work. He died in 1909.

Crawford, THOMAS, sculptor, was born in New York city, in 1814; died in 1857. His most famous works comprise *Orpheus and Cerberus*, *Adam and Eve*, *Hebe and Ganymede*, *Mercury and Psyche* and *Dancing Jenny*. He performed important works for the National government and the State of Virginia.

Crawford, WILLIAM HARRIS (1772-1834), an American statesman, born in Amherst Co., Virginia. He was admitted to the Georgia bar in 1798, and became U. S. Senator in 1807. He was minister to France in 1813, Secretary of War in 1815, and Secretary of the Treasury 1816-25. In 1824 he was nominated for the presidency by a congressional caucus, but was defeated.

Crawfordsville, a city, county seat of Montgomery Co., Indiana, 43 miles N. W. of Indianapolis. It is the seat of Wabash College and was the home of many famous authors, notably General Lew Wallace, Meredith Nicholson, Maurice Thompson, etc. It has manufactures of shale brick, wire, nails, fences, boxes, caskets, furniture, galvanized iron tank and stock fountains, acetylene gas machines, etc.; also has saw and planing mills, canneries and a pavilion for the sale of live stock. Pop. (1910) 9371; (1920) 10,139.

Crayon (krā'un), a colored pencil obtained from certain mineral substances in their natural state, but more commonly manufactured from a fine paste of chalk or pipe-clay colored with various pigments, and consolidated by means of gum, wax, etc. A kind of *crayon painting* (or *pastel* painting) is practised to some extent, the coloring matter in a soft state being rubbed on with the finger.

Cream (krēm), the yellowish, thick oily layer which forms at the surface when new milk is allowed to remain at rest. When it is agitated or churned butter is formed.

Creamery, a factory for the production of butter. Such factories, often run on the coöperative principle, are widely distributed in the United States. Here the cream from many farms is received and worked into butter by the aid of improved machinery, managed by skilled operators. In some cases the milk is received and the cream separated by centrifugal machines. In others the milk is skimmed at home and only the cream sent. The creamery product is better and more uniform than that usually made on farms and is produced with greater economy.

Cream of Tartar, or POTASSIUM BITARTRATE ($KHC_4H_4O_6$), exists in grapes, tamarinds, and other foods. It is prepared from the crystalline crust (crude tartar or

argol) deposited on the vessels in which grape juice has been fermented. The argol is dissolved by boiling with water, the mixture filtered, and the cream of tartar allowed to crystallize out. The commercial product usually contains a small percentage of calcium tartrate.

Creasote (krē'a-sōt), a substance discovered by Reichenbach about 1831 in wood-tar, from which it is separated by a tedious process. It is generally obtained, however, from the products of the destructive distillation of wood. In a pure state it is oily, heavy, colorless, has a sweetish, burning taste and a strong smell of peat smoke or smoked meat. It is a powerful antiseptic. Wood treated with it is not subject to dry-rot or other disease. It has been used in surgery and medicine with great success. Also spelled creosote.

Creasy (krē'si), Sir Edward Shepherd, English historian, was born at Bexley, Kent, in 1812; died in 1878. He was educated at Eton, and at King's College, Cambridge, of which he was elected a fellow in 1834. He was called to the bar at Lincoln's Inn in 1837, and was for about twenty years a member of the home circuit. In 1840 he was appointed professor of history at the London University, and in 1860 was made chief-justice of Ceylon, receiving at the same time the honor of knighthood. His principal works are: *The Rise and Progress of the British Constitution* and *The Fifteen Decisive Battles of the World.*

Creationism (krē-ā'shun-i z m), the doctrine that a soul is specially created for each human fœtus as soon as it is formed in the womb; opposed to *Traducianism*, which teaches that the souls of children as well as their bodies are begotten by reproduction from the substance of the parents; and to *Infusionism*, which holds that souls are preëxistent, and that a soul is divinely infused into each human fœtus as soon as it is formed by generation. Many theologians, however, regard the mode of the soul's coming into being as a part of the mystery which envelops the whole subject of the existence and transmission of life. The term *Creationism* has also recently been applied to that theory of the origin of man which is opposed to Evolution.

Crébillon (krā-bē-yōn), Prosper Jolyot de, a French writer of tragedy, was born at Dijon in 1674; died in 1762. His first play, *La Mort des Enfants de Brutus*, was rejected by the actors; but his next productions, *Idoménée* (1705) and *Atrée* (1707), were successful. These were followed by *Rhadamiste* (1711). *Xerxes* (1714), and *Semiramis* (1717). At the age of seventy-six he wrote the *Triumvirate, or the Death of Cicero*, which was brought upon the stage in his eighty-first year.—His son Claude Prosper, born in 1707; died in 1797; was in high repute for his wit and his writings. His chief works are: *Le Sopha, La Hazard du Coin du Feu*, and *Les Egarements du Cœur et de l'Esprit*, all of a licentious cast.

Crèche (krāsh), a public nursery for the children of poor women who have to work out during the day, where for a small payment they are nursed and fed during the day, remaining with their parents at night. These institutions were first started in Paris in 1844; they were soon afterwards introduced into Great Britain, and are now common in large towns. Similar institutions are called day nurseries in the United States.

Crécy, or Cressy (krā-sē, kres'si), a small town of France, in the department of Somme, 9 miles north of Abbeville and 100 north of Paris; pop. 1748. It is celebrated on account of a battle fought here, August 26, 1346, between the English and French. Edward III and his son, the Black Prince, were both engaged, and the French were defeated with great slaughter, 30,000 foot and 1200 horse being left dead on the field, among whom were the King of Bohemia, the Count of Alençon, Louis, Count of Flanders, with many others of the French nobility.

Credence (crē'dens), a small table by the side of the altar or communion-table on which the bread and wine are placed before they are consecrated.

Credit (kred'it), in economics, is the postponement agreed on by the parties of the payment of a debt to a future day. It implies confidence of the creditor in the debtor; and a 'credit system' is one of general confidence of people in each other's honesty, solvency, and resources. By means of a credit system a comparatively small stock of money can be made to do duty for carrying on a number of different transactions; but it is indispensable for every good system of credit that money must be instantly available when required, and this principle applies to every species of transaction where postponed payment is concerned. Public credit is the confidence which men entertain in the ability and disposition of a nation to make good its engagements with its creditors; or the estimation in which individuals hold the public promises of payment, whether

such promises are expressed or implied. The term is also applied to the general credit of individuals in a nation; when merchants and others are wealthy and punctual in fulfilling engagements; or when they transact business with honor and fidelity; or when transfers of property are made with ease. So we speak of the credit of a bank when general confidence is placed in its ability to redeem its notes, and the credit of a mercantile house rests on its supposed ability and probity, which induce men to trust to its engagements. When the public credit is questionable it raises the premium on loans.

Credit, Letter of, an order given by bankers or others at one place to enable a person to receive money from their agents at another place.

Crédit Foncier (krā-dē foṇ-syā), a peculiar mode of raising money on land in France, the peculiarity of which is that the advance must not exceed one-half of the value of the property pledged or hypothecated, and that the repayment of the loan is by an annuity terminable at a certain date. Several companies have been established by the French government with the privilege of making such loans.

Crédit Mobilier (krā-dē mō bēl-yā), a scheme which originated in France in 1852, its objects being to undertake trading enterprises of all kinds on the principle of limited liability, to buy up existing trading companies, and to carry on the business of bankers and stock-jobbers.—Credit Mobilier of America was chartered in Pennsylvania, in 1859, for a general loan and contract business. The charter was purchased in 1867 by a company formed for the construction of the Union Pacific R. R., and a congressional investigation showed that a number of congressmen were private owners of the stock. As the railroad had been assisted by grants of land by Congress it was considered highly improper for members to have a pecuniary interest in such a concern. The expulsion of one senator was recommended, and two representatives were censured.

Creed (krēd), a summary of belief, from the Latin *credo* (I believe), with which the Apostles' and Nicene Creeds begin. These two creeds, together with the Athanasian Creed, are the most ancient authoritative Christian creeds, though numerous ancient formularies of faith are preserved in the writings of the early fathers, Irenæus, Origen, Tertullian, etc., which agree in substance, though with some diversity of expression. The Nicene Creed was so called from being adopted as the creed of the church at the Council of Nicæa or Nice, 325 A.D., though its terms were subsequently somewhat altered. The Apostles' Creed probably dates from the end of the fourth century; but there is no evidence of its being accepted in its present form till the middle of the eighth. The Athanasian Creed was certainly not drawn up by St. Athanasius, as there is no sufficient evidence for its existence before the end of the eighth or beginning of the ninth century. In addition to these three creeds, the Roman Catholic Church has the creed of Pius IV, put forth in 1564, and consisting of the Nicene Creed with additional articles adopted by the Council of Trent, to which is now added a profession of belief in the definitions of the Vatican Council. The English Church adopts as 'thoroughly to be received and believed' the three ancient creeds, which as part of her liturgy may be read in the Book of Common Prayer, but does not consider any of them to be inspired. Besides these creeds, there are numerous Confessions of Faith, which have been adopted by different churches and sects. The Thirty-nine Articles of the Book of Common Prayer form a confession of faith for the Anglican Church. The creed of the Church of Scotland and other Presbyterian churches is contained in the Confession of Faith, drawn up by the Westminster Assembly of Divines, and completed in 1646.

Creedmoor (krēd'mōr), a station on the Long Island railway, 11 miles east of the city of New York. It is much frequented by riflemen for target practice.

Creek (krēk), a small inlet, bay, or cove; a recess in the shore of the sea or of a river. In America and Australia the term is often applied to a small river, an affluent of a larger one.

Creeks, American Indians formerly in Georgia and Alabama, but now residing in Eastern Oklahoma. The number of warriors used to amount to about 16,000, but altogether the tribe does not now exceed 9300. They have made considerable progress in agriculture, and raise horses, cattle, fowls, and hogs, and cultivate tobacco, rice, and corn.

Creepers (crē'pers), a family (Certhiadæ) of birds which strongly resemble the woodpeckers in their habit of creeping on the stems of trees with the aid of the strong quills which project from the tail feathers, and of securing their insect food by an exsertile tongue. The common creeper (*Certhia familiāris*) is European, but is

represented by American species. It is a pretty and interesting little bird, which builds its nest usually in holes or crevices of trees. The wall-creeper (*Tichodróma muraria*) of Southern Europe searches for its insect food on rocks. The family is found in all parts of the world.

Crefeld. See *Krefeld.*

Crema (krā'ma), a fortified city of Northern Italy, province Cremona, on the Serio, 25 miles E. S. E. of Milan; pop. 8027. It contains a cathedral, picture gallery, etc.

Cremation (krē-mā'shun), the destruction of the bodies of the dead by fire or extreme heat. Cremation was generally practiced in ancient times instead of burial, and has recently been advocated on hygienic grounds. But the modern method is altogether different from the ancient, the slow-burning pile of wood being replaced by the closed furnace of high temperature. Various methods of cremation have been proposed, the great difficulty being to consume the body without permitting the escape of noxious exhalations, and without mingling the ashes with foreign substances. In Siemens' process, a modification of a plan of Sir Henry Thompson, this is successfully accomplished. Cremation societies have been instituted in many of the American States.

Crematory (krē'ma-to-ri), a building in which cremation is practised. It contains a furnace heated to a very high temperature, into which the body is introduced and converted to ashes.

Cremnitz. See *Kremnitz.*

Cremona (krē-mō'na), a city of Italy, capital of province of same name, on the left bank of the Po, 47 miles S. E. by E. of Milan. It is surrounded by walls and wet ditches, its circumference being nearly five miles. The most remarkable edifice is the cathedral, begun in 1107 and completed about 1491. Close by, and connected with the cathedral, is the Torazzo, one of the loftiest and most beautiful towers in Italy. Cremona is the seat of a bishopric, and has considerable manufactures of silk, wool, cotton, etc. It was at one time celebrated for its violins, especially those made by Antonio Stradivari, Joseph Guarnerius, and members of the Amati family. Pop. 39,344. The province has an area of 695 square miles and a population of 327,802.

Crenelle (krē-nel), an embrasure in an embattled parapet or breastwork. The adjective *crenellated* is applied in architecture to a kind of embattled or indented molding of frequent occurrence in buildings of the Norman style.

Creole (krē'ōl; Spanish, *criollo*) is the name which was originally given to all the descendants of Spaniards born in America and the West Indies. It is now used in a wider sense to signify the descendants of Europeans of any nation born in South America and the West Indies, as well as in some other localities. *Creole dialects* are those jargons which originated from the mixture of different languages in the West Indies, Southern United States, etc., and are spoken by the descendants of the slaves. According to the European language which prevails in a Creole dialect it is called *French creole, Spanish creole,* etc.

Creosote. See *Creasote.*

Crescendo (kre-shen'dō), or Cresa. (Italian), a musical term signifying that the notes of the passage over which it is placed are to be gradually swelled. Crescendo passages are marked < signfying piano to forte; the corresponding mark > diminuendo, or decrescendo, marking the transition from forte to piano.

Crescent (kres'ent; Lat. *crescens*, growing), an emblem representing the moon in her horned state. This emblem is of very high antiquity, being that of the Greek goddess Artemis or Diana. It is found on medals of many ancient cities, particularly of Byzantium, from whence it is supposed to have been borrowed by the Ottomans. Since their establishment in Europe it has been the universal emblem of their empire. The crescent has given name to a Turkish order of knighthood from the form of the badge, instituted by Selim, Sultan of Turkey, in 1801.

Crescentiaceæ (kre-sen-ti-ā'se-ē), a small family of corollifloral dicotyledons, of which the genus *Crescentia*, the calabash-tree, is the type.

Crespi, (kres'pi), GIUSEPPE MARIA, an Italian painter of the Bolognese school, born at Bologna in 1665; died in 1747. He had many scholars, among whom were his two sons Antonio and Luigi Crespi. The latter distinguished himself by his writings on painting. Crespi is also known as an engraver.

Cress, the name of several species of plants, most of them of the nat. order Cruciferæ. Water-cress, or *Nasturtium officinale*, is used as a salad, and is valued in medicine for its antiscorbutic qualities. The leaves have a moderately

pungent taste. It grows on the brinks of rivulets and in moist grounds. Common garden cress is the *Lepidium sativum;* Normandy cress *Barbarea præcox;* winter cress, *B. vulgāris;* Indian cress, *Tropǣlum majus;* bitter cress, *Cardamine pratensis* (cuckoo-flower).

Cresselle (kre-sel'; Fr. *crecelle*), a wooden rattle used in some Roman Catholic countries during Passion Week instead of bells to give notice of divine worship.

Cresset (kres'et), a name which appears to have been given in the middle ages and later indifferently to the fixed candlesticks in great halls and churches, to the great lights used as beacons and otherwise, and to lamps or firepans suspended on pivots and carried on poles in processions, municipal and military watches, etc.

Cressy. See *Crécy.*

Crest (krest; Latin, *crista*), in ancient armor, the plume or tuft of feathers, or the like, affixed to the top of the helmet. In heraldry the crest is a figure originally intended to represent the ornament of the helmet, but is now generally placed upon a wreath, coronet, or cap of maintenance, above both helmet and shield. The crest is considered a greater criterion of nobility than the coat of arms itself, and it is now commonly a piece of the arms.

Crest on a wreath.

Creston (kres'ton), a city, county seat of Union Co., Iowa, 100 miles E. of Omaha, 75 miles S. W. of Des Moines, on the Chicago, Burlington & Quincy R. R., which has here extensive round houses, etc. The city has machine shops, planing mills and cold storage plant, and has a very large trade in butter, eggs and poultry. It is the center of 'Greater Community' movements, comprising 13 counties. Pop. (1920) 8034.

Creswick (kres'ik), THOMAS, an English painter (1811-69), member of the Royal Academy. His best works are *England, London Road* and *Weald of Kent.*

Cretaceous (krē-tā'shus; or CHALK), in geology the upper strata of the Secondary series, immediately below the Tertiary series, and superincumbent on the Oölite system. This group is common to Europe, and also to a part of Asia. It consists of chalk resting upon arenaceous and argillaceous deposits, which are also regarded as part of the system. It has been divided into two parts—the *Upper*, consisting entirely of chalk or marl, and subdivided into the *upper* or *soft chalk*, containing many flint and chert nodules; the *lower* or *harder chalk*, with fewer flints; and the *chalk marl;* and the *Lower*, consisting of sands and clay, and subdivided into the *upper greensand;*

A Cretaceous Bird (*Hesperornis regalis*).

gault, a bluish, tenacious clay; and the *lower greensand.* Palæontologists have suggested another division founded on the fossil remains found in the system, in accordance with which the upper greensand and gault are transferred to the upper series, and the lower greensand and Wealden beds and Hastings sands constitute the lower.

Crete (krēt). See *Candia.*

Cretinism (krēt'in-izm), a form of idiocy associated with a peculiar condition of the body, occurring in Switzerland and other mountainous countries. Cretins are usually affected with goiter, and are usually the offspring of goiterous parents. They are ill grown and stunted, with swollen bellies. The skin is coarse, head large, the nose sunken and flattened at the bridge, the lips thick, chin protruding, mouth wide and gaping, the tongue large. The countenance is dull and heavy; there is general muscular weakness and slowness of sensibility. Associated with these are feebleness or want of intellect, varying in degree from absolute vacuity to a certain power of acquiring a little knowl-

edge; sometimes deafness and dumbness, perhaps squinting and blindness. Careful treatment under a physician by means of thyroid extract usually restores the victim almost to normal. The treatment must be almost continuous throughout life, associated with good food, cleanliness, exercise, etc.

Cretonne (krē-ton'), a cotton cloth with various textures of surface, printed on one side with pictorial and other patterns, and used for curtains, covering furniture, etc.

Creuse (krœz), an inland department of France comprising the greater part of the old province of Marche; area, 2150 square miles. It derives its name from the river Creuse, which rises in it, and traverses it diagonally in a northwest direction, afterwards flowing on to join the Vienne. The surface is generally rugged, and the soil, which is thin and rests upon granitic rocks, is by no means fertile. Pop. (1906) 274,094.

Creuzer (kroi'tsėr), GEORG FRIEDRICH a German philologist and archæologist, born in 1771; died in 1858. For nearly forty-five years he filled the chair of philology and ancient history at Heidelberg. He wrote on the mythology of Greece and other nations, on Greek history and literature, Roman antiquities, etc.

Creuzot (kreu-zō), LE, a town of Eastern France, dep. Saône-et-Loire, 14 miles from Autun, with extensive ironworks, the most complete in France. The mining of coals, the smelting of iron, and the manufacture of machinery give employment to about 15,000 workmen in the town and vicinity, the greater number being employed at the works of Schneider & Co. Pop. 33,500.

Crewe (krō), a municipal town of England, in Cheshire, 21 miles S. E. Chester, an important railway center and the seat of enormous manufactories of railway material. It is a modern town, well laid out, and chiefly inhabited by people connected with the railways. It has a commodious market hall, a corn exchange, mechanics' institution, townhall, etc. Pop. 44,970.

Crewel-work (krō'el), work executed with the needle, and consisting of designs sewed in colored silk or woolen threads on a basis of unbleached cotton or linen, toweling, or the like.

Crewkerne (krō'kėrn), a town of England, in Somersetshire, 16 miles S. E. of Taunton; manufactures sailcloth. Pop. 3939.

Cribbage (krib'āj), a favorite English game at cards played with the whole pack. It may be played by two, three, or four persons; and when by two, five or six cards may be dealt to each. Five-card cribbage played by two persons is the most scientific game. Sixty-one points make the game; there are no tricks and no trumps, the object being to make *pairs*, *fifteens*, *sequences*, or the *go*, or prevent the adversary from doing the same. Court cards and tens count ten each, and all the rest count for the number of 'pips' upon them. Every *pair*, that is, every couple of cards of the same value belonging to different suits (two aces, two fours, two kings, etc.), counts two; and when there are three or four similar cards, as many pairs are counted as there are different combinations of the cards taken two at a time. Every combination of cards, the united pips of which make up fifteen, counts two. A sequence consists of three or more cards of any suit following one another in rank, and counts one for each card. When the player whose turn it is to play cannot play a card without going beyond thirty-one, the other player scores one for having been the nearest to thirty-one. This is called scoring one for 'the go.' The remaining cards after thirty-one, or the next point to it, is made are thrown up, and each player's cards are counted. When all the cards in a hand, either with or without the turn-up card, are of one suit, or when all the cards in the crib, with the turn-up card, are of one suit, it is called a *flush*, and counts one for each card. When the turn-up card is a knave the dealer scores two ('two for his heels'). When a knave of the same suit with the turn-up card is found in the hand of either player, the player in whose hand it is scores one ('one for his nob').

Crichton (krī'ton), JAMES, surnamed the *Admirable*, a Scottish celebrity, son of Robert Crichton, lord-advocate, was born in 1560; died about 1585. He was educated at the University of St. Andrews, and, according to the current accounts of him, before his twentieth year had run through the whole circle of the sciences, could speak and write to perfection ten different languages, and was equally distinguished for his skill in riding, fencing, singing and playing upon all sorts of instruments. He visited Paris, Genoa, Venice, Padua, etc., challenging all scholars to learned disputations, vanquishing doctors of the universities, and disarming the most famous swordsmen of the time in fencing. He was latterly tutor to a son of the

Duke of Mantua, and is said to have been stabbed to the heart in a dastardly manner by his pupil. The story of his achievements seems to be rather highly colored; but he was extravagantly praised by Aldus Manutius, the printer of Venice, by whom he was well known. He left some Latin poems, which are said to be possessed of no remarkable quality.

Cricket (krik'et), an insect of the genus *Gryllus*, or *Achēta* of some naturalists, order Orthoptera. There are several species. The house-cricket is the *Achēta* (*Gryllus*) *domestica;* the field-cricket is the *Achēta* (*Gryllus*) *campestris;* the mole-cricket is the *Gryllotalpa vulgāris*. The house-cricket of Europe is about an inch long, with antennæ of about an inch and a half, of a pale yellowish color mixed with brown. By the friction of the peculiarly formed wing-covers the males produce that stridulous sound of which these insects are so well known, and which has become associated with ideas of cheerful domestic comfort. They live in holes and crevices near fireplaces or in other warm situations, whence they come out at night to feed on crumbs and other fragments of food. The field-cricket makes a similar noise. The house-cricket has been introduced into the United States, and there are several species of field-cricket there also. See also *Mole-cricket*.

Cricket, a favorite open-air game played with bats, balls, and wickets on a piece of smooth greensward. It is played by two opposite sets or sides of players, generally numbering eleven each. Two *wickets* of three *stumps* each are pitched fronting each other at a distance of about 22 yards apart, the stumps being upright rods stuck in the ground, and projecting 27 inches. On the top of each set of stumps are placed two small pieces of wood called *bails*. After the rival sides have tossed for the choice of either taking the bat or fielding, two men are sent to the wickets bat in hand. The opposite or fielding side are all simultaneously engaged; one (the bowler) being stationed behind one wicket for the purpose of bowling his ball against the opposite wicket, where his coadjutor (the wicket-keeper) stands ready to catch the ball should it pass near him; the other fielders are placed in such parts of the field as is judged most favorable for stopping the ball after it has been struck by the batsman or missed by the wicket-keeper. It is the object of the batsman to prevent the ball delivered by the bowler reaching his wicket either by merely stopping it with his bat or by driving it away to a distant part of the field. Should the ball be driven any distance the two batsmen run across and exchange wickets, and continue to do so as long as there is no risk in being 'run out,' that is, of having the stumps struck by the ball while they are out of their position near the wickets. Each time the batsmen run between the wickets is counted as a 'run,' and is marked to the credit of the striker of the ball. If the batsman allows the ball to carry away a bail or a stump, if he knocks down any part of his own wicket, if any part of his person stops a ball that would have otherwise reached his wicket, or if he strikes a ball so that it is caught by one of the opposite party before it reaches the ground, he is 'out,' that is, he gives up his bat to one of his own side; and so the game goes on until all the men on one side have played and been put out. This constitutes what is called an 'innings.' The other players now take the bat and try to defend their wickets and make runs as their rivals did. Generally after two innings each have been played by the contestants the game comes to an end, that side being the victors who can score the greatest number of runs. It is the national game of England, as baseball is of the United States.

Cricklade (krik'lād), a town of England, County Wilts, on the Thames and the Severn Canal, 42 miles N. of Salisbury; pop. 5830. Cricklade now gives name to the northern parliamentary division of Wiltshire.

Crieff (krēf), a town of Scotland, County Perth, beautifully situated on a slope above the Earn, backed by lofty hills and crags. The principal manufacture is woolens (shirtings, blankets, tweeds, etc.). Pop. 5208.

Crillon (krē-yōn), LOUIS DES BALBES DE BERTON DE, a great French warrior of the sixteenth century, born in 1541; died in 1615. He won distinction in five successive reigns—those of Henry II, Francis II, Charles IX, Henry III, and, above all, in that of Henry IV. He distinguished himself at the capture of Calais, and in the battles of Dreux, Jarnac, and Moncontour (1569), against the Huguenots, and in the naval battle of Lepanto against the Turks. The massacre of St. Bartholomew was reprobated by him. He fought for Henry at Ivry against the Catholic League.

Crime (krīm), a term used to indicate sometimes a violation of the higher moral law, sometimes more specifically the violation of a certain group of the laws formulated by a nation. This group properly comprises in its scheme all offenses endangering the wel-

CRICKET

The view shows a game of cricket in progress on the grounds of the Germantown Cricket Club, one of the oldest and best known cricket clubs in the United States. The batter is seen bending over with bat in position to defend his wicket and ready to receive the ball.

fare of the community, as distinct from civil or private injuries, which are as between person and person, and terminate with the compensation of the injured. Hence from the legal point of view crime is sometimes defined as an offense punishable by law directly, as opposed to an offense which the law punishes indirectly by granting damages to the person wronged. (See *Criminal Law.*) Whether used in the legal or the moral sense crime implies freedom of will, the power of distinguishing between right and wrong, and a fulfilled intention. Hence, though the theoretic rule of common law is that all infraction of law is criminal and penal, it is held that young children, madmen, and idiots cannot commit crimes.

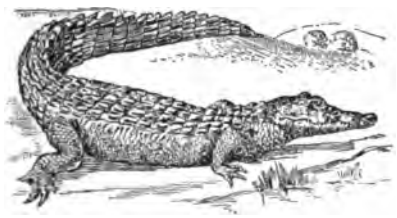
Crimea (kri-mē'a), THE (Russ, *Krim*, anc. *Chersonēsus Taurica*), a peninsula of Southern Russia, government of Taurida, to the mainland of which it is attached by the Isthmus of Perekop; area, 10,000 sq. miles. On the west and south it is washed by the Black Sea, and on the east by the Sea of Azof, a portion of which, shut off from the rest by a long and narrow strip of land, forms the Sivash or Putrid Sea. Three-fourths of the Crimea belongs to the region of steppes, but the other part, confined entirely to the south, and stretching along the coast from west to east, abounds in beautiful mountain scenery. Here the valleys looking southward are luxuriant with vines and olive and mulberry plantations, while the northern slope gives a large yield in cereals and fruits. The climate, however, is unequal, and in winter is severe. The chief stream is the Salghir. Others of some importance are the Tchernaya and the Alma. The most important of the productions, besides those already mentioned, are tobacco, of which a large quantity of excellent quality is produced, flax and hemp. The forests are of limited extent. There are large numbers of fine-wooled sheep, and horned cattle and horses are reared in large numbers. Pop. est. at 450,000. The chief town and port is Sebastopol. The country was anciently associated with the Cimmerians, and in later times with various Greek settlements and minor kingdoms. After being for some time a dependency on Rome, it was overrun by successive bodies of barbarians, and in 1237 fell into the hands of the Mongols under Genghis Khan. About 1261 the Genoese were permitted to occupy and fortify Kaffa, and they rapidly extended their power in the formation of other settlements. They were expelled, however, in 1475 by Mahomet II, who made it a dependent khanate. In 1783 the Russians took possession of the country; and with the view of overawing the Turks the great naval arsenal of Sebastopol, occupying the most commanding position in the Black Sea, was begun by Catharine II in 1786. Its military resources were steadily developed up to the time of the Anglo-French campaign (see *Crimean war*) of 1854, when it was occupied by the allies.

Crimean War (kri-mē'an), the struggle between England, France and Turkey on the one hand, and Russia on the other, to prevent the undue preponderance of Russia in the east of Europe; 1854 to 1856. The old plans for the extension of Russian power conceived by Catharine II and Potemkin were resuscitated by Nicholas I, who, believing that he had secured himself from interference on the part of Austria and Prussia, and that an Anglo-French alliance was impossible, prepared to carry them into action. Servia, Bosnia, Bulgaria, and the principalities of the Danube were to become Russian protectorates, and Constantinople was to be provisionally occupied by Russian troops. The first markedly aggressive step—the demand by Russia for a protectorate over the Greek Church throughout the Turkish empire—brought matters to a crisis. An ultimatum presented by Menschikoff in May, 1853, was rejected by the Porte; the Russians occupied the Danubian principalities; and war was declared by the Porte in October, 1853, by France and England in 1854, and by Sardinia in 1855. A French and English fleet entered the Baltic and captured Bomarsund and one of the Aland Islands, and in the south the allies landed at Varna, under Lord Raglan and Marshal St. Arnaud as commanders-in-chief. While the allies were making preparations Prussia and Austria demanded the evacuation of the Danubian principalities, and on this evacuation being ordered by Nicholas, 'for strategic reasons,' the principalities were provisionally occupied by the Austrians. It soon became obvious that the Crimea must be the seat of the war, and 50,000 French and English troops with 6000 Turks were landed at Eupatoria (September, 1854). Five days later the battle of Alma was won by the allies (September 20th), and the march continued towards the south side of Sebastopol. Soon after St. Arnaud died and was succeeded by Canrobert. The siege of Sebastopol was commenced by a grand attack which proved a failure, and the Russians under Liprandi retaliated by attacking the English at Balaklava (October 25), but were defeated with heavy loss. It was at this battle that the famous, but useless, charge

was made by the Light Brigade. A second attack at Inkerman was again repulsed by the allies, but the siege works made slow progress during the winter, in which the ill-supplied troops suffered great privations. The death of Nicholas and succession of Alexander II. in March, 1855, brought no change of policy. Canrobert resigned in favor of Pélissier; and shortly after an unsuccessful attack on those parts of the fortification known as the Malakhoff and Redan Lord Raglan died, and was succeeded by Simpson. The bombardment was continued, and in September the French successfully stormed the Malakhoff, the simultaneous attack on the Redan by the British proving a failure. The Russians, however, then withdrew from the city to the north forts and the allies took possession. The chief subsequent event was the capture of Kars, in Asia, by the Russians, after a splendid defense by the Turks under General Williams. By this time, however, the allies had practical possession of the Crimea, and overtures of peace were gladly accepted. A treaty was accordingly concluded at Paris on April 27, 1856, by which the independence of the Ottoman Empire was guaranteed. See *Paris, Treaty of.*

Criminal Law (krim'i-nal), the law relating to crimes. The general theory of the common law is that all wrongs are divisible into two species: first, civil or private wrongs or *torts;* secondly, criminal or public wrongs. The former are to be redressed by private suits or remedies instituted by the parties injured. The latter are redressed by the State acting in its sovereign capacity. The general description of the private wrongs is that they comprehend those injuries which affect the rights and property of the individual, and terminate there; that of public wrongs or offenses being that they comprehend such acts as injure, not merely individuals, but the community at large, by endangering the peace, the comfort, the good order, the policy, and even the existence of society. In the first, therefore, so far as the law is concerned, the compensation of the individual whose rights have been infringed is held to be a sufficient atonement; but in the second class of offenses it is demanded that the offender make satisfaction to the community as acting prejudicially to its welfare. The exact boundaries between these classes are not, however, always, easy to be discerned, even in theory; for there are few private wrongs which do not exert an influence beyond the individual whom they directly injure. The divisions, torts and crimes, are thus not necessarily mutually exclusive, cases sometimes occurring in which the person injured obtains damages, while at the same time the criminal is subjected to punishment, not as against the individual, but as against the State. It is, moreover, obvious that legal criminality is not in any strict sense the measure of the morality of actions, though the legal enactment tends to enforce itself as a moral law. In large part it is only an approximate expression of the current sense of justice, this expression being both aided and hindered by the historical and constantly reflexive character of legal method. The basis of the criminal law of Great Britain is to be found in a series of loose definitions and descriptions, of which many, and those among the more important, date from the thirteenth century. The irregular superstructure reared upon these consists mainly of parliamentary enactments which originated in the eighteenth century. The laws as formulated, however, in any country, by no means always represent the law as interpreted, the whole system being further complicated by a mass of judicial comments and particular constructions. Thus, while there is a statutory division of crimes into treasons, felonies, and misdemeanors, the distinctions between them are so uncertain that it is possible to regard the first head as merely the isolation of a subcase of felony; while in respect of the second and third classes, the distinction can only be clearly marked by an enumeration of the crimes arbitrarily assigned to each in the common law and judges' decisions. Even in severity of punishment a misdemeanor may rank as high as a felony. The aim of criminal law as at present constituted is both retributive and preventive—in its former aspect being based upon the primitive passion of retaliation, in the latter primarily upon the fundamental instinct of self-preservation. The prevention of crime may, however, be effected in a threefold manner: by imposing a penalty which shall operate by fear to deter men from committing crimes, or by rendering it physically impossible for a man of known criminal tendency to repeat an offense, or by the reformation of the criminal. With the higher evolution of society the principle of retaliation has fallen into theoretical disrepute, though still a practical legal factor; and the problems of penology are made to turn almost exclusively upon the principle of prevention in these three aspects, and especially in the last two. In the several States of the Union the doctrine of the English common law is incorporated in the statute laws, as to

order Crocodilia are as follows:—The skin is covered with square bony plates; the tail is long and compressed laterally. The four feet are short, and there are five toes on each of the two forefeet, and four on each of the hind feet; the limbs are feeble. The jaws are long and



Crocodile (*Crocodilus Niloticus* or *vulgaris*).

their gape of enormous width. The nostrils are at the extremity of the snout, and capable of being closed to prevent ingress of water. The heart is four-chambered. The most ancient forms of the group were the *Teleosaurus*, from the Lias and Oölite, and the *Streptospondylus*, from the Lias, Oölitic and Wealden strata. The families now existing are the *Alligatoridæ*, *Crocodilidæ* and *Gavialidæ*. The alligators are all New World forms. (See *Alligator.*) The gavial proper (*Gavialis Gangeticus*) is confined to the East Indies. (See *Gavial.*) The *Crocodilidæ*, to which family the crocodile belongs, have unequal teeth and no abdominal plates, and the cervical and dorsal plates are distinct for the most part. The crocodile of the Nile (*Crocodilus vulgaris*) is the best known member of the order; another species (*C. palustris*) is met with in South Asia, Sunda and the Moluccas. There is also a species in tropical America. The crocodile is formidable from its great size and strength, but on shore its shortness of limb, great length of body, and difficulty of turning enable men and animals readily to escape pursuit. In the water it is active and formidable. It is exclusively carnivorous, and always prefers its food in a state of putrefaction. In Egypt it is no longer found except in the upper or more southern parts, where the heat is greatest and the population least numerous. Crocodiles are still common enough in the river Senegal, the Congo, Niger, etc. They grow sometimes to a length of 30 feet, and apparently live to a vast age.

Crocoisite (kro'koi-zīt), a mineral, a native form of lead chromate, or red-lead ore. In it chromium was first discovered.

Crocus (krō'kus), a genus of plants of the order Iridaceæ or Iris, forming one of the most common ornaments of our gardens. Most of the species are natives of the south of Europe and the Levant; and three grow wild in Britain. They may be divided, according to their period of flowering, into *vernal* and *autumnal*. Among the vernal crocuses may be mentioned the white and purple *C. vernus; C. versicōlor*, distinguished by the yellow tube of its flower bearded with hairs, and its sweet scent; *C. biflōrus*, the Scotch crocus, with beautiful penciled sepals, and clear or bluish-white petals. Among the autumnal species are *C. nudiflōrus* and *C. sativus*, whose long, reddish-orange, drooping stigmas when dried form *saffron*. See *Saffron.*

Crœsus (krē'sus), the last king of Lydia, son of Alyattes, whom he succeeded in 560 B.C., and extended the empire from the northern and western coasts of Asia Minor to the Halys on the east and Mount Taurus on the south, including the Greek colonies of the mainland. His riches, obtained chiefly from mines and the gold-dust of the river Pactolus, were greater than those of any king before him, so that his wealth became proverbial. Having entered upon war with Cyrus, he was taken prisoner in his capital, Sardis (B.C. 546). The date of his death is unknown, but he survived his captor, and is referred to in the reign of Cambyses.

Croft, WILLIAM, an English musical composer, born in 1677. He was organist in the chapel royal, and published *Musica Sacra, or Select Anthems*, etc. Died in 1727.

Crofter (krof'tèr), a petty farmer renting a few acres of land, with sometimes the right of grazing his cattle in common on a piece of rough pasture. Crofters are numerous in the Highlands and in the Western Islands of Scotland, as well as in some other localities. From many districts they have been removed owing to their holdings being absorbed in sheep farms or deer forests, and they are now mainly congregated on the seashore, where they partly maintain themselves by fishing.

Croker (krō'ker), JOHN WILSON, an English writer and politician, born at Galway, in 1780. He was educated in Cork, and at Trinity College, Dublin, and called to the Irish bar in 1802. In 1803 he published anonymously; *Familiar Epistles on the Irish Stage*, and in 1805, an *Intercepted Letter from China*, both clever satires. In 1808 he entered Parliament as member

for Downpatrick. He was appointed in 1809 to the post of secretary to the admiralty, which he retained till the reign of William IV. The Reform Bill was strenuously opposed by him, and on the passing of that measure in 1832 he withdrew from public life. He was one of the founders of the *Quarterly Review*, and one of its ablest contributors, though his articles display frequent malevolence. His other writings include an edition of Boswell's *Life of Johnson; Ulm and Trafalgar* and *Talavera*, two poems; *Stories from the History of England*, from which Sir Walter Scott derived his idea of *Tales of a Grandfather;* and editions of the *Suffolk Papers, Lady Hervey's Letters, Lord Hervey's Memoirs* and *Walpole's Letters*. He died in 1857.

Croker, THOMAS CROFTON, a collector of folklore, born at Cork in 1798. While in a merchant's office in Cork he commenced the collection of the songs and legends current among the peasantry of the south of Ireland. In 1819 an appointment in the admiralty was obtained for him, and he retired with a pension in 1850. His best-known work is his *Fairy Legends and Traditions of the South of Ireland* (1825). He died in 1854.

Croll, JAMES, an English physicist, born in 1821; died in 1890. Self-trained in science, he was on the Scotch geological survey 1867-81. He wrote *Climate and Time, Stellar Evolution, The Philosophical Bases of Evolution*, etc.

Croly (krō'li), GEORGE, author and preacher, born at Dublin in 1780; studied at Trinity College, Dublin; was appointed to a small curacy in Ireland, but resigned it and became a prominent figure in London journalism and letters. His separate literary works comprise: *Paris in 1815*, a poem; the *Angel of the World*, a tale; *Catiline*, a tragedy; *Pride shall have a Fall*, a comedy, 1824; *Salathiel*, a romance; etc. He is also the author of several biographical and other works; and numerous sermons. In 1835 he was made rector of St. Stephen's, Wallbrook. As a preacher he was deservedly popular. He died in 1860.

Cromarty (krom'ar-ti), a seaport of Scotland, at the extremity of the peninsula which separates the Moray from the Cromarty Firth, 16 miles N. E. of Inverness. It was the birthplace of Hugh Miller. Pop. 1242. —The county of Cromarty consists of a large number of detached portions scattered over the county of Ross with which they are practically merged. The total area is about 220,800 acres. See *Ross and Cromarty*.

Crome (krōm), JOHN, an English artist, son of a Norwich weaver; born in 1769. During the greater part of his life he was a teacher of drawing. In 1805 he founded the Norwich Society of Artists, of which he became president as well as chief contributor to its annual exhibitions. He excelled in depicting the scenery of his native county, and especially in his handling of trees; and his high place among British landscape painters is now universally acknowledged. He died in 1821.

Cromer, EVELYN BARING, first Earl (1841-1917), British statesman and administrator, was born at Cromer Hall, Norfolk, and educated at Woolwich Academy. He joined the Royal Artillery in 1858, and in 1872 acted as private secretary to Lord Northbrook, Viceroy of India. He became major in 1876 and was appointed British commissioner of the Egyptian public debt office. He was finance minister of India from 1880 to 1883, when he became British agent and consul-general in Egypt. He was created first Baron Cromer in 1892, viscount in 1897, and earl in 1901. He reorganized every department of the Egyptian administration and was known as 'the builder of modern Egypt.'

Cromer (krō'mer), a small seaport and bathing place of England, on the N. coast of Norfolk, County Norfolk, 21 miles sub-Norwich. The old town is now fresh merged, the sea constantly making encroachments. Pop. (parish) 4074.

Cromlech (krom'lek), an ancient monument consisting of two or more columns of unhewn stone supporting a large tabular block so as to form a rectangular chamber, beneath the floor of which is sometimes found a cist enclosing a skeleton and relics. Sometimes the cromlech was encircled by ring of standing-stones, as in the case of the Standing-stones of Stennis, in Orkney; and sometimes it was itself buried beneath a large mound of earth. See *Dolmen*.

Cromlech at Lanyon, Cornwall.

Crompton (kromp'tun), SAMUEL, inventor of the mule-jenny; born near Bolton, England, in 1753. He

early displayed a turn for mechanics, and when only twenty-one years of age invented his machine for spinning cotton, which was called a *mule*, from its combining the principles of Hargreave's spinning-jenny and Arkwright's roller-frame, both invented a few years previously. The mule shared in the odium excited among the Lancashire hand-weavers against these machines, and for a time Crompton was obliged to conceal his invention. He afterwards brought it again into work; but was unable to prevent others from profiting by it at his expense. Various improvements were introduced from time to time on the mule, but the original principle, as devised by Crompton, remained the same. The sum of £5000, voted to him by Parliament in 1812, was almost all the remuneration which he received for an invention which contributed so essentially to the development of British manufactures. He died in 1827.

Cromwell (krom'wel), BARTLETT JEFFERSON (1840-1917), an American rear-admiral, born at Springplace, Georgia. He was appointed to the United States Naval Academy from Nebraska; said to be the first naval cadet appointed from that state. He graduated in 1861 and served in the South Atlantic blockading squadron and the East Gulf squadron during the Civil war. He became commander in 1874, captain in 1889, and commodore in 1898. At the conclusion of the Spanish-American war he was ordered to Havana to take charge of the naval station. He was promoted to rear-admiral in 1899. He was captain of the Navy Yard at Norfolk 1891-94, and commandant of the Portsmouth Navy Yard 1900-01. He was commander-in-chief of the South Atlantic Station in 1901 and later of the European Station.

Cromwell (krom'wel), OLIVER, Lord-protector of the Commonwealth of England, Scotland and Ireland, was born at Huntingdon April 25, 1599. His father, Robert Cromwell, who represented the borough of Huntingdon in the Parliament of 1593, was a younger son of Sir Henry Cromwell, who was knighted by Queen Elizabeth; and Sir Henry again was a son of Sir Richard Williams, a nephew of Thomas Cromwell, Earl of Essex, whose name he took. Oliver's mother was a daughter of William Steward, of Ely, and could trace her descent back to Alexander, lord-steward of Scotland, the founder of the house of Stuart. The first really authentic fact in his biography is his leaving school at Huntingdon and entering Sidney-Sussex College, Cambridge, April 23, 1616. On the death of his father in 1617 he returned home, and in 1620 married Elizabeth, daughter of Sir James Bourchier. In 1628 he was member of parliament for the borough of Huntingdon, to which he returned on the dissolution in 1629. In 1631 he went with his family to a farm which he had taken at St. Ives; and in 1636 to Ely, where he had inherited a property worth nearly £500 a year. During the Short and Long Parliaments he represented Cambridge, his influence gradually increasing. In the summer of 1642 he was actively engaged in raising and drilling volunteers for the parliamentary party, in view of the impending struggle with the king. He served as captain and colonel in the earlier part of the war, doing good service with his troop of horse at Edgehill; and it was his energy and ability which made the Eastern Association the most efficient of those formed for mutual defense. At the battle of Winceby (1643) he led the van, narrowly escaping death, and in the following year he led the victorious left at Marston Moor, deciding the result of the battle. A few months later he was present at the second battle of Newbury, and his action being fettered by the timidity of Manchester, he impeached the conduct of the earl. As the result of this disagreement Sir Thomas Fairfax was made lord-general, while Cromwell, notwithstanding the Self-denying Ordinance, was placed under him, with the command of the cavalry and the rank of lieutenant-general. As the result of the discipline introduced by Cromwell, the decisive victory of Naseby was gained in 1645, and Leicester, Taunton, Bridgewater, Bristol, Devizes, Winchester and Dartmouth fell into the hands of the Parliament. On the occasion of the surrender of Charles by the Scottish army in 1646 Cromwell was one of the commissioners, and in the distribution of rewards for services received £2500 a year from the estates of the Marquis of Worcester. Though at first supporting Parliament in its wish to disband the army, which refused to lay down its arms till the freedom of the nation was established, he afterwards saw reason to decide in favor of the latter course. Hastily suppressing the Welsh rising, he marched against the Scottish royalists, whom he defeated with a much inferior force at Preston (August 17, 1648). Then followed the tragedy of the king's execution, Cromwell's name standing third in order in the death-warrant. Affairs in Ireland demanding his presence, he was appointed lord-

lieutenant and commander-in-chief; and by making a terrible example of Drogheda (September, 1649), crushed the royalist party in that country within six months. Resigning the command to Ireton, he undertook, at the request of the Parliament, a similar expedition against Scotland, where Charles II had been proclaimed king. With an army greatly reduced by sickness he saved himself from almost inevitable disaster by the splendid victory at Dunbar (September 3, 1650), and a year later put an end to the struggle by his total defeat of the royalists at Worcester (September 3, 1651). For these services he was rewarded with an estate of £4000 a year, besides other honors.

He already exerted a weighty influence in the supreme direction of affairs, being instrumental in restoring the continental relations of England, which had been almost entirely dissolved, and regulating them so as to promote the interests of commerce. The Navigation Act, from which may be dated the rise of the naval power of England, was framed upon his suggestion, and passed in 1651. The Rump Parliament, as the remnant of the Long Parliament was called, had become worse than useless, and on April 20, 1653, Cromwell, with 300 soldiers, dispersed that body. He then summoned a council of state, consisting mainly of his principal officers, which finally chose a Parliament of persons selected from the three kingdoms, nicknamed *Barebone's Parliament*, or the *Little Parliament*. Fifteen months after a new annual Parliament was chosen; but Cromwell soon prevailed on this body, who were totally incapable of governing, to place the charge of the commonwealth in his hands. The chief power now devolving again upon the council of officers (December 12, 1653), they declared Oliver Cromwell sole governor of the commonwealth, under the name of *Lord-protector*, with an assistant council of twenty-one men. The new protector behaved with dignity and firmness. Despite the innumerable difficulties which beset him from adverse Parliaments, insurgent royalists, and mutinous republicans, the early months of his rule established favorable treaties with Holland, Sweden, Portugal, Denmark and France. In September, 1656, he called a new Parliament, which undertook the revisal of the constitution and offered Cromwell the title of king. On his refusal he was again installed as Lord-protector, but with his powers now legally defined. Early in the following year, however, he peremptorily dissolved the house, which had rejected the authority of the second chamber. Abroad his influence still increased, reaching its full height after the victory of Dunkirk in June, 1658. But his masterly administration was not effected without severe strain, and upon the death of his favorite daughter, Elizabeth Claypole, in the beginning of August, 1658, his health began to fail him. Towards the end of the month he was confined to his room from a tertian fever, and on September 3, 1658, died at Whitehall, in the sixtieth year of his age. He was buried in King Henry VII's Chapel, in Westminster Abbey, but after the Restoration his body was taken up and hanged at Tyburn, the head being fixed on a pole at Westminster Abbey, and the rest of the remains buried under the gallows.—Great as a general, Cromwell was still greater as a civil ruler. He lived in a simple and retired way, like a private man, and was abstemious, temperate, indefatigably industrious, and exact in his official duties. He possessed extraordinary penetration and knowledge of human nature; and devised the boldest plans with a quickness equaled only by the decision with which he executed them. No obstacle deterred him; and he was never at a loss for expedients. Cool and reserved, he patiently waited for the favorable moment, and never failed to make use of it. In his religious views he was a tolerant Calvinist. He was about 5 ft. 10 in. in height, his body 'well compact and strong,' and his head and face, though wanting in refinement, were impressive in their unmistakable strength.

He had appointed his eldest son, RICHARD, his successor; but the republican and religious fanaticism of the army and officers, with Fleetwood at their head, compelled Richard to dissolve Parliament; and a few days after he voluntarily abdicated the protectorship, April 22, 1659. His brother HENRY, who from 1654 had governed Ireland in tranquillity, followed the example of Richard, and died in privacy in England. At the Restoration Richard went to the continent until 1680, when he assumed the name of *Clark*, and passed the remainder of his days in tranquil seclusion at Cheshunt, Hertfordshire. He died in 1712, at the age of eighty-six.—The last of the family was OLIVER CROMWELL, great-grandson of Henry Cromwell, son of the protector. He was a London solicitor, and clerk to St. Thomas' Hospital. He succeeded to the estate of Theobalds, which descended to him through the children of Richard Cromwell, and died at Cheshunt Park in 1821, aged seventy-

nine. He wrote the *Memoirs of the Protector and His Sons*, illustrated by Family Papers, 1820.

Cromwell, THOMAS, Earl of Essex, son of a blacksmith at Putney, in Surrey; born about the year 1490. In his youth he was employed as clerk to the English factory at Antwerp; in 1510 went to Rome; and on his return to England became confidential servant of Cardinal Wolsey, about 1525. On his master's disgrace in 1529 Cromwell defended him with great spirit in the House of Commons, of which he was then a member; and effectually opposed the articles of treason brought against Wolsey. After the cardinal's death he was taken into the king's service, was knighted and made privy-councilor, and in 1534 became principal secretary of state and master of the rolls. In 1535 he was appointed visitor-general of all the monasteries in England in order to suppress them, his services being rewarded by the post of lord-keeper of the privy seal, and the title of Baron Cromwell of Okeham. On the abolition of the pope's supremacy he was created king's vicar-general, and used all his influence to promote the Reformation. He was made chief-justice itinerant of the forests beyond Trent, Knight of the Garter, and finally, in 1539, lord high chamberlain, and the following year Earl of Essex. He at length fell into disgrace with the king for the part he took in promoting his marriage with Anne of Cleves; and others of his political schemes falling, he was arrested on a charge of treason, and beheaded on Tower Hill, July 28, 1540.

Cronstadt (kron'stat), a town of Roumania, in Transylvania, at the base of the Transylvanian Alps, 60 miles S. E. of Hermannstadt. It is a place of commercial and industrial importance, ranking first in Transylvania; and has a number of manufactures. Pop. (1919 est.) 41,056.

Cronstadt, a maritime fortress of Russia, about 20 miles W. of Petrograd, in the narrowest part of the Gulf of Finland, opposite to the mouth of the Neva, on a long, narrow, rocky island, forming both by its position and the strength of its fortifications, the bulwark of the capital, and being also the most important naval station of the empire. Cronstadt used to be the commercial port of Petrograd, but since the construction of a canal giving large vessels direct access to the capital it has lost this position. Pop. 59,539.

Cronus (krō'nus), in ancient Greek mythology, a son of Uranus and Ge (Heaven and Earth), and youngest of the Titans. He received the government of the world after Uranus was deprived of it, and was in turn deposed by Zeus. Cronus was considered by the Romans as identical with their Saturnus.

Crook (krụk), GEORGE, soldier, born near Dayton, Ohio, in 1828; died in 1890. He was graduated at West Point in 1852, was promoted captain in 1861, and became a brigadier-general of volunteers about September, 1862. He commanded an army corps under Sheridan in the Shenandoah campaign of 1864 and was breveted brigadier-general in the regular army. After the Civil war he served with great distinction in the Indian wars, and was one of the chief agents in subduing the bloodthirsty Apaches. He was breveted major-general in 1865 and made chief cavalry commander in the army, and was raised to the full rank of major-general in 1888.

Crookes (krooks), SIR WILLIAM, an eminent English physicist, born at London in 1832. He was educated at the Royal College of Chemistry. He discovered the metal thallium, invented the radiometer, and by his researches with the Crookes vacuum tube opened the way to great advances in science. He published works on chemistry, dyeing, and metallurgy, and was editor of the *Quarterly Journal of Science*. He became a leading advocate of Spiritualism. Died April 4, 1919.

Crookston (krụks'ton), a city, county seat of Polk Co., Minnesota, 230 miles N. W. of St. Paul, on Red River Lake, in a very fertile agricultural region. It is the home of the famous Winter Live Stock Shows, and has machine shops, flour mills, etc. Pop. 6825.

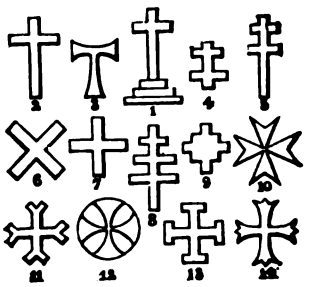
Croquet (krō-kā'), an open-air game played with balls, mallets, hoops and pegs on a level area, which should be at least 30 yards long by 20 wide. The iron hoops (shaped like the inverted letter U) and fixed with their two ends in the ground, arranged in a somewhat zigzag manner over the ground; they are usually ten in number. The posts or pegs (two in number) are placed at the near and far end of the field, respectively, marking the starting and turning points. The game may be played by any number of persons up to eight, either individually or arranged in couples or in sides. The object of the players is to drive with the mallets the balls belonging to their own side through the hoops and against the posts in a certain order,

and to prevent the balls of their opponents from completing the journey before their own by playing them against those of the enemy, and driving them as far as possible from the hoop or post to be played for, the player or players whose balls first complete the course claiming the victory.

Crosby (kros'bē), FRANCES JANE, an American hymn-writer, born in Putnam County, New York, March 24, 1820; died February 12, 1915. She received instruction at the New York Institution for the Blind and was an instructor there from 1847 until her marriage with Alexander Van Alstyne in 1858. She published a number of popular poems, songs and hymns.

Crosier (krō'zher), the staff borne by some of the higher dignitaries in the Roman Catholic and other churches, and probably the oldest of the insignia of the episcopal dignity. The original form of the staff resembled a shepherd's crook, but from the middle of the fourteenth century the archbishops began to carry, sometimes in addition to the pastoral crook, sometimes instead of it, a crosier terminating in a cross or double cross. The crosier is carried by bishops and archbishops themselves only in procession and when pronouncing benediction; on all other occasions it is carried before them by a priest. At Rome the right of bearing the crosier is peculiar to the pope himself, his crosier being in the form of a triple cross.

Cross (krąs), one straight body laid at any angle across another, or a symbol of similar shape. Among the ancients a piece of wood fastened across a tree or upright post formed a cross, on which were executed criminals of the worst class. It had, therefore, a place analogous to that of the modern gallows as an instrument of infamous punishment until it acquired honor from the crucifixion of Christ. The custom of making the sign of the cross in memory of Christ may be traced to the third century. Constantine had crosses erected in public places, palaces, and churches, and adopted it, according to a legend, as the device for a banner (*labarum*) in consequence of a dream representing it as the symbol of victory. In his time also Christians painted it at the entrance of their houses as a sign of their faith, and subsequently the churches were for the most part built in the form of a cross. It did not, however, become an object of adoration until after the alleged discovery of the true cross by the Empress Helena (A.D. 326). Its adoption as the Christian symbol may be held to connect itself with the fact that it was used emblematically long before the Christian era, in the same way that traces of belief in a trinity, in a war in heaven, in a paradise, a flood, a Babel, an immaculate conception, and remission by the shedding of blood are to be found diffused among widely sundered peoples. The general meaning attached to the sign appears to have been that of life and regeneration. Since its adoption by Christianity it has undergone many modifications of shape, and has been employed in a variety of ways for ornaments, badges, heraldic bearings, etc. After the introduction of the cross into the military ensigns of the Crusaders its use in heraldry became frequent, and its form was varied more than that of any other heraldic ordinary, some of the varieties being of great beauty. The name cross is also given to various architectural structures, of which a cross in stone was a prominent feature; thus we have market crosses, preaching crosses, monumental crosses, etc. The principal forms of the cross as a device or symbol are shown in the accompanying cut.



FORMS OF CROSSES.

1, *Cross of Calvary*, a cross on three steps. 2, *Latin Cross*, a cross the transverse beam of which is placed at one-third of the distance from the top of the perpendicular portion, supposed to be the form of cross on which Christ suffered. 3, *Tau Cross* (so called from being formed like the Greek letter τ, *tau*), or cross of St. Anthony, one of the most ancient forms of the cross. 4, *Cross of Lorraine*. 5, *Patriarchal Cross*. 6, *St. Andrew's Cross*, the form of cross on which St. Andrew, the national saint of Scotland, is said to have suffered. 7, *Greek Cross*, or cross of St. George, the national saint of England, the red cross which appears on British flags. 8, *Papal Cross*. 9, *Cross nowy quadrat*, that is, having a square expansion in the center. 10, *Maltese Cross*, formed of four arrow-heads meeting at the points; the badge of the Knights of Malta. 11, *Cross fourchée* or *forked*. 12, *Cross pattée* or *formée*. 13, *Cross potent* or *Jerusalem Cross*. 14, *Cross fleury*, from the fleurs de lis at its ends.

Cross, EXALTATION OF THE, a Catholic festival celebrated on the 14th of September in honor of the recovery of a portion of the true cross from the Persians by Heraclius (628 A.D) and its erection on Mount Calvary.

Cross, INVENTION OF THE (the finding of the cross), a phrase chiefly used in connection with the Catholic festival in honor of the finding of the cross by the Empress Helena (326 A.D.), celebrated on the 3d of May.

Cross, VICTORIA. See *Victoria Cross.*

Crossbar Shot, shots with iron bars crossing through them, sometimes standing out 6 or 8 inches at both sides, formerly used for destroying rigging, palisading, etc.

Crossbearer (*porte-croix, crucifer*), in the Roman Catholic Church, the chaplain of an archbishop or a primate, who bears a cross before him on solemn occasions.

Cross'bill (*Loxia*), a genus of birds of the finch family, deriving their name from a peculiarity of their bill, the mandibles of which are curved at the tips, so as to cross each other, sometimes on the one side and sometimes on the other. The form of the bill enables them to extract with ease the seeds of the pine, their usual food, from underneath the scales of the cones. They build and also breed at all seasons of the year, in December, as in March, April, or May. The common crossbill (*Loxia curvirostra*) is found in the northern countries of Europe. It is from 6 to 6½ inches in length. The male has a red plumage, the female is of a yellowish-green color. The *Loxia pityopsittăcus*, or parrot crossbill, is another European species. Two species of crossbill inhabit Canada and the northern States, *Loxia Americana*, and *Curvirostra leucoptĕra*, or white-winged crossbill.

Crossbow, or ARBALIST, formerly a very common weapon for shooting, consisting of a bow fastened athwart a stock. The bow, which was often of steel, was usually bent by a lever windlass, or other mechanical contrivance, the missile usually consisting of a square-headed bolt or quarrel, but occasionally of short arrows, stones, and leaden bullets. Though largely used on the European continent, the crossbow was superseded at an early period in England by the more efficient longbow, from which twelve arrows could be despatched per minute to three bolts of the crossbow.

Cross-breeding, the breeding together of animals of different races or stocks. See *Breeding.*

Cross-days, the three days preceding the feast of the Ascension.

Crosse, ANDREW, an English physician and scientist, born in 1784; died in 1855. He passed the greater part of his life experimenting in electricity. In 1816 he asserted that by electricity it was possible to communicate one's thoughts instantaneously to persons in the most distant parts of the earth, but he never appears to have attempted to demonstrate the fact by actual experiment. Among other things he applied electricity in the production of crystals, discovered a process of purifying salt water by electricity, and also made some curious discoveries relative to the effects of positive and negative electricity on vegetation.

Cross-examination, the examination of a witness called by one party by the opposite party or his counsel.

Cross-fertilization, in botany, the fertilization of the ovule of one flower by the pollen of another, usually effected by the agency of insects, the action of the wind, water, etc. See *Botany.*

Crossopterygidæ (-rij'i-dē), a suborder of ganoid fossil and recent fishes, so called from the fin-rays of the paired fins being arranged so as to form a fringe (Gr. *krossoi*) round a central lobe. The living *Polyptĕrus* and *Ceratŏdus* belong to this group.

Cross-staff, an instrument used by surveyors consisting of a staff carrying a brass circle divided into four equal parts by two lines intersecting each other at right angles. At the extremity of each line perpendicular sights are fixed, the instrument being used in taking offsets.

Cross-stone, a name given to the minerals *harmotome*, a hydrated silicate of barium and aluminium, and *staurolite*, a silicate of iron and aluminium, in both of which the crystals cross each other. Harmotome, however, has by some mineralogists been called *staurolite*. The name crossstone is sometimes also given to chiastolite, because of the occasional dark markings on the summits of the crystals.

Crosstrees, in ships, certain pieces of timber at the upper ends of the lower and top masts, athwart

which they are laid, to sustain the frame of the tops in the one, and extend the topgallant shrouds on the other.

A A, Crosstrees.

Crotalaria (krō-ta-lār'-i-a), a genus of leguminous plants, all natives of warm climates, but some of them long cultivated in hothouses. *C. juncĕa* is the sunn-hemp plant.

Crotalidæ (k r ō-tal'i-dē), a family of serpents including some of the most dangerous, above all the rattlesnakes.

Crotch (kroch), WILLIAM, a musical composer, born at Norwich, England, in 1775. As a child he showed astonishing precocity, and at the age of twenty-two was appointed professor of music at Oxford University, with the degree of Doctor of Music. In 1822 he became principal of the Royal Academy of Music. He died in 1847. He left a large number of compositions, more especially for the organ, piano, and voice, and three technical treatises.

Crochet. See *Music*.

Croton (krō'ton), a genus of herbaceous plants, shrubs and trees, order Euphorbiaceæ, comprehending a great number of species, many of which possess important medical properties. The more remarkable species are *C. Cascarilla*, a native of the West Indies and

Croton Tiglium.

Florida, which yields the cascarilla bark, a valuable aromatic tonic; *C. laccifĕrum*, a native of the East Indies, said to furnish the finest of all the sorts of lac; *C. Tiglium*, an inhabitant of the East Indies, from the seeds of which croton oil is extracted (see *Croton oil*); and *C. Draco*, a Mexican plant, which yields a red, resinous substance used in making varnish. *C. Pseudo-china*, the copalche plant, yields the bark of that name, but *C. balsamifĕrum*, *C. aromaticum*, and *C. thurifĕrum* are merely aromatic.

Croton, CROTO'NA (the modern CROTONE), in ancient geography, a Greek republic in Magna Græcia of South Italy, famous for its *athletæ*, among whom the chief was Milo. It is still more celebrated as the city where Pythagoras taught between 540 and 530 B.C.

Croton Oil, a vegetable oil expressed from the seeds of the *Croton Tiglium*. It is so strongly purgative that one drop is a full dose, and half a drop will sometimes produce a powerful effect, and it should never be used except by the direction of an experienced physician. When applied externally it causes irritations and suppuration, and thus it is used as a counter-irritant in neuralgia, etc.

Croton River, a small stream which flows into the Hudson, 30 miles above New York. For a long time it was the chief water supply of New York, now superseded by the great Ashokan Reservoir (q. v.). The first Croton Aqueduct, 38 miles long, was constructed 1837-42; larger dams were built and a new reservoir opened in 1890. Nearly 30 miles of the aqueduct formed a continuous rock tunnel lined with brick and stone masonry, with a supply capacity of 400,000,000 gallons daily.

Crottles (krot'els), a popular name of various species of lichens collected for dyeing purposes, and distinguished as black, brown, white, etc., crottles. Under it are included *Parmelia physōdes*, *P. caperata*, *P. saxatilis*, *Sticta pulmonaria*, and *Levanōra pallescens*.

Croup (krōp). Two diseases are commonly confounded under the term 'croup,' one a simple and, if promptly treated, a readily subdued disease, the other most fatal. The former is simple inflammation of the inner lining membrane of the larynx—the box of the windpipe—or of the windpipe itself, or of both. It is common in children, and as the air-passage of children is narrow, the swelling produced by the inflammation so diminishes the space that difficult breathing, hoarseness of voice, and a cough like a muffled bark are quickly produced, while the breathing sounds loud and harsh. The other disease is diphtheria of the larynx or wind-

pipe, or both, in which a false membrane is formed which lines the air-passages, and so narrows them. Croup frequently proves fatal by suffocation, induced either by spasm affecting the glottis or by a quantity of matter blocking up the air-passages. The earliest symptoms should be noted, and the treatment in the absence of immediate medical advice should consist in the application of hot poultices to the upper part of the chest, while at the same time the child is made to inhale the steam from hot water. Hot drinks are beneficial, and the bowels should be freely opened.

Crousaz (krō-zä), JEAN PIERRE DE, a Swiss mathematician and philosopher, born in 1663; died in 1748 or 1750. His chief works are: *Système des Réflexions, ou nouvel Essai de Logique; Traité du Beau; De l'Education des Enfans; Traité de l'Esprit Humain*, etc.; also an examination of Pope's *Essay on Man*.

Crow (krō; *Corvus*), a genus of birds, type of the family Corvidæ. It includes, in Europe, the carrion-crow, the hooded or Royston crow, the raven, the rook, and the jackdaw, the last three of which are described under their respective heads. The carrion-crow, or simply the crow (*C. corone*), is 18 or 19 inches in length, and about 36 between the tips of the wings. Its plumage is compact and glossy blue-black with some greenish reflections. Its favorite food is carrion of all kinds; but it also preys upon small quadrupeds, young birds, frogs, lizards, etc., and is a confirmed robber of the nests of game birds and poultry. It is not gregarious, being generally met with either solitary or in pairs. It builds a large, isolated nest, with from four to six eggs, generally of a bluish-green with blotches of brown. The carrion-crow is easily tamed, and may be taught to articulate words. The American crow (*C. Americānus*) is similar to the foregoing, but is smaller and less robust, and is somewhat gregarious. This crow is common in all parts of the United States, and is deemed a great nuisance by farmers from preying on their corn. The fish-crow (*C. ossifrăgus*), another American crow, resembling the preceding but smaller, is abundant in the coast districts of the Southern States. Its favorite food is fish, but it also eats all kinds of garbage, mollusca, etc. In winter its food is chiefly fruit, and it is then fat and considered good eating. The hooded, Royston, or gray-backed crow (*C. cornix*) is somewhat larger than the rook. Its head, wings, and tail are black, but less bright than in the rook; the rest of the body is a dull smoke-gray. Its food is similar to that of the carrion-crow, and it builds a similar nest.

Crowberry, or CRAKEBERRY (*Empetrum nigrum*), a plant resembling the heaths, and bearing a jet-black berry, common in all the northern parts of Europe, Asia, and North America. The berries, which have a slight acid taste and are sometimes eaten, afford a purple dye. The red crowberry (*E. rubrum*), which has a red fruit, grows in the neighborhood of the Straits of Magellan.

Crow-blackbird, the name of certain American birds of the genus *Quiscălus*, family Sturnidæ or starlings. The great crow-blackbird (*Q. major*), found in the Southern States, Mexico, and the West Indies, is 16 inches long, and of a glossy black plumage. The female is of a light-brown above and whitish beneath. The purple grackle, lesser or common crow-blackbird (*Q. versicŏlor*), is similar in color to the preceding, but smaller. They reach the middle states of America from the south in flocks in the latter part of March, and build in April in the tall pines or cedars. On their first arrival they feed upon insects, but afterwards commit great ravages upon the young corn. In November they fly southward again.

Crowfoot. See *Ranunculus*.

Crow Indians, a tribe of North American Indians. They belong to the linguistic stock included under the name of Siouan Indians and are of the same family as the Dakotas. Their present number is about 2000, confined to reservations in Montana.

Crowland (krō'land), or CROYLAND, a town of Lincolnshire, England, notable for its ancient triangular bridge and ruined abbey.

Crowley (krō'li), a city, county seat of Acadia Parish, La., 70 miles w. of Baton Rouge, in a rich agricultural district. Rice is extensively cultivated and there are a number of rice mills in the city. Pop. (1920) 6108.

Crown (kroun), a circular ornament for the head. As now used the name is limited to the headdress worn by royal personages as a badge of sovereignty, but it was formerly used to include the wreaths or garlands worn by the ancients upon special occasions. Thus, among the Greeks and Romans, crowns made of grass, flowers, twigs of laurel, oak, olive, parsley, etc., and later of gold, were made use of as honors in

athletic contests, as rewards for military valor, and at feasts, funerals, etc. It is, however, with the eastern diadem rather than with the classic corona that the crown as a symbol of royalty is connected; indeed, it was only introduced as such a symbol by Alexander the Great, who followed the Persian usage. Antony wore a crown in Egypt, and the Roman emperors also wore crowns of various forms, from the plain golden fillet to the radiated or rayed crown. In modern states they were also of various forms until heralds devised a regular series to

British Crown

mark the grades of rank from the imperial crown to the baron's coronet. The English crown has been gradually built up from the plain circlet with four trefoil heads worn by William the Conqueror. This form was elaborated and jeweled, and finally arched in with jeweled bands surmounted by the cross and scepter. As at present existing the crown of England is a gold circle, adorned with pearls and precious stones, having alternately four Maltese crosses and four fleur-de-lis. From the top of the crosses rise imperial arches, closing under a mound and cross. The whole covers a crimson velvet cap with an ermine border. The crown of Charlemagne, which is preserved in the imperial treasury of Vienna, is composed of eight plates of gold, four large and four small, connected by hinges. The large plates are studded with precious stones, the front one being surmounted with a cross; the smaller ones, placed alternately with these, are ornamented with enamels representing Solomon, David, Hezekiah and Isaiah, and Christ seated between two flaming seraphim. The Austrian crown is a sort of cleft tiara, having in the middle a semicircle of gold supporting a mound and cross; the tiara rests on a circle with pendants like those of a miter. The triple crown of the popes is more commonly called the tiara.

Crown Gall, a destructive disease that attacks most fruit trees as well as red raspberries, grapes, roses and many other plants. The crown galls occur at the crown or on the roots and sometimes on the stems. They are more or less spherical, with irregular, roughened surface. The organism which causes the disease lives in the soil for several years and is very difficult to eradicate; a long rotation of crops is often necessary.

Crown-glass, the hardest and most colorless kind of window-glass, made almost entirely of sand and alkali and a little lime, and used in connection with flint-glass for optical instruments in order to destroy the disagreeable effect of the aberration of colors.

Crown Imperial. See *Fritillary.*

Crown Lands, the lands belonging to the British crown. These are now surrendered to the country at the beginning of every sovereign's reign in return for an allowance (the Civil List) fixed at a certain amount for the reign by Parliament. They are placed under commissioners, and the revenue derived from them becomes part of the consolidated fund. See *Civil List.*

Crown Point, a place of great importance in the early history of America, at the southern end of Lake Champlain, New York. The French took possession of it in 1731 and built Fort St. Frederic. In June, 1755, Sir William Johnson (q. v.) endeavored to take Crown Point, but was held up by Dieskau (q. v.) at Lake George, where Johnson built Fort William Henry (q. v.), while the French built a fort at Ticonderoga called Carillon. General Lord Loudon, in 1756, concentrated his efforts against Ticonderoga and Crown Point, but accomplished nothing. It was finally abandoned by the French in July, 1759, after General Jeffery Amherst (q. v.) had captured Ticonderoga. Amherst then built a fort of solid masonry, twenty-five feet thick, at Crown Point, at a cost of $10,000,000, it is said.

Crown Wheel, a wheel with teeth set at right angles to its plane. It is used in certain cases instead of bevel wheels for connecting two shafts at right angles.

Croydon (kroi'dun), a residential town of Surrey, England, 10 miles from London. Pop. 169,551.

Crozier. See *Crosier.*

Crucian Carp (krösh'yan karp), a thick, broad fish, of a deep-yellow color, the *Cyprinus carassius*, differing from the common carp in having no barbules at its mouth, inhabiting lakes, ponds and sluggish rivers in the north of Europe and Asia.

Crucible (krö'si-bl), a vessel employed to hold substances which are to be submitted to a high temperature without collecting the volatile products of the action. It is usually of a conical, circular, or triangular shape, closed at the bottom and open to the top, and is made of various materials, such as fire-clay, platinum, a mixture of fire-clay and plumbago, porcelain, etc.

Cruciferæ (krö-sif'e-rē), a very extensive nat. order of dicotyledonous plants, consisting of herbs which all have flowers with six stamens, two of which are short, and four sepals and petals, the spreading limbs of which forms a Maltese cross, whence their name. The fruit is a pod with a membranous placenta dividing it into two cells. The mustard, watercress, turnip, cabbage, scurvy-grass, radish, horse-radish, etc., belong to this family. They have nearly all a volatile acridity dispersed through every part, from which they have their peculiar odor and sharp taste and their stimulant and antiscorbutic qualities. None are really poisonous. Some are found in our gardens because of their beauty or fragrance, as the wall flower, stock, candytuft, etc.

Crucifix (krö'si-fiks), a cross bearing the figure of Christ. As a rule, the figures on the most ancient crucifixes were not carved, but were engraved on gold, silver, or iron crosses. At a later period they were painted on wood, and it is only in the ninth century, in the pontificate of Leo III, that the figure of Christ appears carved upon the cross in bas-relief. Originally the body was represented clothed in a tunic reaching to the feet; afterwards the clothing was removed with the exception of a cloth round the loins. Until the eleventh century Christ is represented alive; since that period he has been represented as dead. In the earlier crucifixes, also, the number of nails by which Christ is fixed to the cross is four, one through each hand and each foot, while in the more modern ones one foot is laid above the other and a single nail driven through both. Many crucifixes bear also the superscription in an abbreviated form, and accessory symbols and figures.

Crucifixion (krö-si-fik'shun), a mode of inflicting capital punishment, by affixing criminals to a wooden cross, formerly widely practised, but now chiefly confined to the Mohammedans. Different kinds of crosses were employed, especially that consisting of two beams at right angles and the St. Andrew's cross.

Cruden (krö'den), ALEXANDER, compiler of the *Concordance to the Scriptures*, was born at Aberdeen in 1701. He took the degree of M.A. at Marischal College, and in 1722 proceeded to London, where he was employed as tutor. He afterwards opened a bookseller's shop under the Royal Exchange, and in 1735 was appointed bookseller to Queen Caroline. His great work appeared in 1737, under the title of *A Complete Concordance of the Holy Scriptures of the Old and New Testaments.* In a pecuniary point of view it was not at first successful, and the embarrassments to which it reduced him unsettled his reason and led to his confinement at Bethnal Green. He was again temporarily confined in 1753. He died in Islington in 1770. Three editions of the *Concordance* appeared in his lifetime, and he was also the author of *A Scripture Dictionary, or Guide to the Holy Scriptures* and *The History and Excellency of the Scriptures.*

Cruelty to Animals. See *Animals, Cruelty to.*

Cruelty to Children, Prevention of. The fact that defenseless children are often grossly maltreated by inhuman parents and others under whose care they fall has led to the formation of societies and to legislation for their protection. The first of these societies was formed in New York and is still the largest and most influential. Then they spread to the other large American cities. Liverpool in 1883 and London in 1884 were the first to follow in England, and legislation has been passed in both countries to aid those engaged in this benevolent work.

Cruikshank (krųk'shank), GEORGE, the greatest of English pictorial satirists after Hogarth, born at London in 1792, of Scottish extraction. He began early as a political satirist. In 1837 he commenced in *Bentley's Miscellany* his famous series of etchings on steel illustrative of Dickens' *Oliver Twist.* Having connected himself with the temperance movement he produced the *Bottle*, a powerful and popular series of designs. He latterly turned his attention to oil

painting, his most noteworthy pictures being *Tam o'Shanter, Disturbing a Congregation*, and *The Worship of Bacchus*. He died in 1878.

Cruiser (krö'sėr), in present-day naval phraseology, a vessel built to secure speed and fuel capacity at the expense of armor and battery strength. The modern cruiser may be regarded as the offspring of the frigate of the eighteenth and nineteenth centuries. Of this modern type in the United States navy, the first was the *Atlanta* (1884) of the speed of 16 knots, followed by the *Newark* class, 19 knots, the *Olympia* (1892), 21.5 knots, the *Columbia* (1892) and the *Minneapolis* (1893), 23 knots. The later construction has been designed for a minimum speed of 25 knots, with a possible attainment of 30 knots or over under favorable conditions. The battleship and one form of cruiser were evolved from the conflicting opinions of two opposite schools of design. The battleship is the expression of the thoughts of those who stood for extremely developed battery power, great thickness of armor plate, and moderate speed. The cruiser is the result of the triumph of those who contended for high speed at the sacrifice of heavy armor protection and excessive battery strength. The *armored* cruiser was the particular development of the antagonistic views prevailing among naval architects. The type of this class in the United States navy was the *Brooklyn*, which figured prominently in the war with Spain in 1898. Recently the armored cruiser has been superseded by the *battle* cruiser. The armor protection in this type of ship is much lower than that of the battleship, while the ordnance, on the other hand, is practically the same. High speed, wide radius of action and great battery strength are the characteristics of this type; and to meet these requirements the battle cruiser is planned of a size considerably larger than the battleship. The *protected* cruiser is a later development of naval construction. Its distinguishing features are certain modifications in the distribution of the mass of protective armor of the ship. *Light* cruisers are vessels of from 1500 to 7500 tons, used in scouting, as commerce destroyers, etc. They are outside the armored class.

Cruiser, in forestry, the term applied to one who cruises in the forest for the purpose of surveying and estimating the amount and value of the standing timber. A definition of recent origin.

Cruive (krōv), a trap for fish, especially salmon, consisting of a sort of hedge of stakes on a tidal river or the sea-beach. When the tide flows the fish swim over the wattles, but are left by the ebb.

Crusades (krö-sādz'), the wars carried on by the Christian nations of the West, from the end of the eleventh till the latter half of the thirteenth century, for the conquest of Palestine. They were called *Crusades* because the warriors wore the sign of the cross. The antagonism between the Christian and Mohammedan nations had been intensified by the possession of the Holy Land by the Turks and by their treatment of pilgrims to Jerusalem; and the first strenuous appeal was assured of response alike from the pious, the adventurous, and the greedy. The immediate cause of the *first Crusade* was the preaching of Peter of Amiens, or Peter the Hermit, who in 1093 had joined other pilgrims on a journey to Jerusalem. On his return he gave Pope Urban II a description of the unhappy situation of Christians in the East, and presented a petition for assistance from the Patriarch of Jerusalem. The statements of the pope at the Councils of Piacenza and Clermont in 1095 produced a profound sensation throughout Europe, and in 1096 several armies set out in different divisions, most of which, being ignorant of military discipline and unprovided with necessaries, were destroyed before reaching Constantinople, which had been chosen for their place of meeting. A well-conducted regular army, estimated at 150,000 men, was headed by Godfrey of Bouillon; Hugh of Vermandois, brother to Philip, King of France; Baldwin, brother of Godfrey; Robert II of Flanders; Robert II of Normandy, brother of William II, King of England; Raymond of Toulouse; and other warriors. They traversed Germany, Hungary, and the Byzantine Empire, passed over into Asia Minor, conquered Nicæa in June, 1097, and shortly after, on July 4th, fought the first pitched battle at Dorylæum, being completely victorious after a severe contest. They then marched through Asia Minor upon Antioch, which, with the exception of the citadel, fell into their hands by treachery in June, 1098. Surrounded in turn by a Turkish army, they were soon reduced to pitiable straits, but succeeded in routing their besiegers on June 28. After remaining nearly a year in the neighborhood of Antioch they began, in May, 1099, their march against Jerusalem, the siege of which they commenced in June. Their numbers were now reduced to little more than 20,000 men; but after a fierce struggle the town was taken by storm on July 15th, and Godfrey of Bouillon was chosen King of Jerusalem, or, as he pre-

ferred to term himself, Protector of the Holy Sepulcher. At his death in 1100 he was succeeded by his brother Baldwin, who had in the earlier part of the Crusade established himself in Edessa, and made himself ruler of an extensive territory stretching over the Armenian mountains and the plain of Mesopotamia.

The *second* great and regularly conducted Crusade was occasioned by the loss of Edessa, which the Saracens conquered in December, 1144. Fearing still graver losses, Pope Eugenius III, seconded by Bernard of Clairvaux, exhorted the German emperor, Conrad III, and the King of France, Louis VII, to defend the cross. Both these monarchs obeyed, and in 1147 led large forces to the East, but returned in 1149 without having accomplished anything.

The *third* Crusade was undertaken after the capture of Jerusalem by Saladin in 1187, the monarchs Frederick I (Barbarossa) of Germany, Philip Augustus of France, and Richard I (Cœur de Lion) of England, leading their armies in person. Frederick, marching by way of the Danube and crossing from Gallipoli, defeated the Turks at Philomelium (now Finiminum), and penetrated to Seleucia, but was drowned in the Selef. His son Frederick led the small remains to Acre and took part in the siege, but after his death in 1191 the German army dwindled away. The other monarchs—Richard and Philip Augustus—had in the meantime met at Vezelai in June, 1190, and agreed to unite their forces at Messina in Sicily, where they spent six months at the end of 1190 and beginning of 1191. Philip joined the other Crusaders before Acre on April 13, 1191; but Richard, whose fleet was separated by a storm, went to Cyprus, and, dispossessing Isaac Comnenus, made himself king. It was not till the 8th of June that he reached Acre, which surrendered a month later. Jealousies, however, arose between the monarchs, and within a few weeks after the fall of Acre the French king returned to Europe. Richard, now sole leader of the expedition, defeated Saladin and occupied Jaffa or Joppa; but having twice vainly set out with the design of besieging Jerusalem, he concluded (September 2, 1192) a truce of three years and three months with Saladin, who agreed that pilgrims should be free to visit the Holy Sepulcher, and that the whole sea-coast from Tyre to Jaffa (including the important fortress of Acre) should belong to the Crusaders.

The *fourth* Crusade was set on foot by Pope Innocent III, who commissioned Fulk of Neuilly to preach it in 1198. Among its chief promoters was Godfrey of Villehardouin; Seneschal of Champagne; Baldwin, Count of Flanders and Hainaut; Dandolo, the aged Doge of Venice; and the Marquis of Montferrat, who was chosen leader. The Crusaders assembled at Venice in the spring of 1202, but were diverted from their original purpose first by the capture of the Dalmatian town of Zara, and then by the expedition which ended in the sack of Constantinople and the establishment of a Latin empire there (1204).

The *fifth* Crusade, undertaken by Andreas of Hungary in 1217, and shared in by John of Brienne, to whom the title of King of Jerusalem was given, had little other result than the temporary occupation of the Nile delta.

The *sixth* Crusade, that of Frederick II, Emperor of Germany, was undertaken at the instance of Popes Honorius III and Gregory IX. On arriving he entered into negotiations with the Sultan of Egypt, and without any fighting recovered for himself, as heir of John of Brienne, the Kingdom of Judea, on the condition of tolerating in his kingdom the Mohammedan worship. He then concluded a useless truce of ten years, got himself crowned at Jerusalem, and returned in 1229.

The *seventh* and *eighth* Crusades were led by St. Louis of France (Louis IX) in person. This prince was resolved to strike a blow at Mohammedanism in Egypt. He took Damietta in June, 1249, and marched up the Nile, but was compelled to retreat, and finally to surrender with his whole army. He recovered his liberty by the surrender of Damietta, returned to Palestine, and in 1254, on the death of his mother, to France. The second expedition of Louis was still more disastrous in its results than the first. He landed his army in 1270 on the northern coast of Africa; but he himself and a large number of his knights died before Tunis, and the majority of the French Crusaders returned home. A crusading army under Prince Edward of England (afterwards Edward I), originally intended to coöperate with that of Louis, landed at Acre in 1271, but little was effected beyond a new truce for ten years (1272). For nineteen years longer the Christians in Palestine held with great difficulty the remnants of the Latin kingdom there. But Tyre and Berytus (Beyrout) were successively snatched from them, and finally the capture of Acre by the Sultan of Egypt in 1291 put an end to the kingdom founded by the Crusaders.

Despite their want of success, however,

the Crusades were of considerable indirect value in that by these joint enterprises the European nations became more connected with each other, the class of citizens increased in influence, partly because the nobility suffered by extravagant contributions to the Crusades, and partly because a more intimate commercial intercourse greatly augmented the wealth of the cities, and a number of arts and sciences, till then unknown in Europe, were introduced.

Crusado. See *Cruzado.*

Crusca, ACCADEMIA DELLA. See *Academy.*

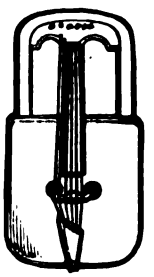
Crustacea (k r u s-t ā' s h e-a), one of the primary branches into which is divided the great group of Articulate or Annulose animals. The body is divided into head, thorax and abdomen, of which the two former are united into a single mass, cephalothorax, covered with a shield or carapace, and the abdomen usually presents the appearance of a tail. In some—the sand-hopper, wood-louse, etc.—the head is partially distinct from the thorax. The Crustacea breathe by branchiæ or gills, or by membranous vesicles, or by the general surface; and the body is composed of a series of rings more or less distinct. They possess the faculty of reproducing lost parts in an eminent degree. The integument is chitinous (see *Chitin*) and remains elastic in some, as the Isopods, throughout life. But in the majority it is calcified or transformed into a hard shell, prisms of carbonate of lime being deposited in the outer layer. It consists of a great number of distinct pieces connected together by portions of the epidermic envelope, just as among the higher animals certain bones are connected together by cartilages. Several species, if not all, molt or cast these outer skeletons or shells in the progress of growth; this is the case with crabs, crayfish, etc. The general grouping of the Crustacea is sometimes based upon the successive metamorphoses which the higher Crustaceans undergo before reaching the adult form. Thus, the first stage of the lobster embryo is that of a minute object with three pairs of limbs, known as the Nauplius form; in the second, or Zoëa stage, the cephalothorax is provided with anterior, posterior, and lateral spines; the final form being reached by a series of moltings. But for practical purposes the Crustacea may be considered as ranging themselves under four subclasses: the Cirripedia, the Entomostraca, the Podophthalmia, and the Edriophthalmia. Of these the Cirripedia are represented by the barnacles; the Entomostraca by the cyclops, daphnia, etc.; the Podophthalmia by the shrimps, prawns, lobsters, etc.; the Edriophthalmia by the fish-lice, wood-lice, beach-fleas, etc. Besides the orders comprised under these classes there are, however, several groups, such as the Merostomata and the Trilobites, which lie between the Crustaceans and the Insects, and are as yet unattached to either.

Crutched Friars (krucht), an order of friars established at Bologna in 1169, and so named from their adopting the cross as their special symbol. It originally formed the head of their distinctive staff; afterwards they wore it in red cloth on the back and breast of their blue habit.

Cruz, SANTA. See *Santa Cruz.*

Cruzado (k r ū-z a'dō), a Portuguese coin. The old cruzado, or cruzado-velho, is worth 400 reis, or about 43 cents; the new cruzado, cruzado-novo or pinto, dating from 1722, is worth 480 reis, or about 50 cents.

Crwth (kruth), a Welsh name for a kind of violin with six strings, formerly much used in W a l e s. Four of the strings were played on by a bow, and two w e r e struck or twitched by the t h u m b. Its g e n e r a l length was 22 inches, and its thickness 1½ inches.



Crwth.—Carl Engel's Musical Instruments.

Cryolite, or KRYOLITE (krī'ō-līt), a mineral, a native fluoride of aluminium and sodium, found at Evigtok, in Greenland, whence it is exported. It is of a pale grayish white or yellowish brown, occurs in masses of a foliated structure, and has a vitreous luster. It has been employed as a source of aluminium, and in the manufacture of a hard porcelainous glass of great beauty. In addition to the Evigtok deposit cryolite has been discovered in the Ural Mountains.

Cryophorus (krī-of'ō-rus; Gr. *kryos,* c o l d), an instrument for showing the diminution of temperature in water by its own evaporation. Wollaston's cryophorus consists of two glass globes united by a moderately wide glass tube. Water is poured in and boiled to expel the air, and while boiling the apparatus is hermetically sealed. When it is to be used the water is made to

run into one of the globes, and the other is buried in a freezing mixture. The aqueous vapor in the globe being thus condensed, a vacuum is produced, fresh vapor rises from the water in the other globe, which is again condensed, and this proceeds continuously till the water remaining in the globe has been, by the evaporation, cooled to the freezing point.

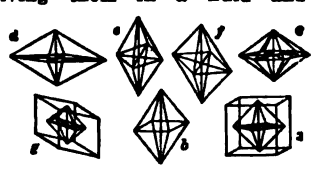
Crypt (kript), originally a subterranean cell or cave, especially one constructed for sepulture. From the usage of these by the early Christians crypt came to signify a church underground or the lower story of a cathedral or church. It is usually set apart for monumental purposes, but is sometimes used as a chapel. The crypt is a common feature of cathedrals, being always at the east end, under the chancel or apse. The largest in England is that of Canterbury Cathedral; that of Glasgow Cathedral, formerly used as a separate church, is one of the most perfect pieces of architecture in Britain.

Cryptogamous Plants (krip-tog'a-mus), CRYTOGAMIA, the botanical division embracing the lower classes of plants having no evident flowers or in which the reproductive organs are obscure. They propagate by spores. They are divided into cellular and vascular cryptogams, the former comprising the algæ, fungi, lichens, charas, liverworts and mosses; the latter the ferns, horsetails, moonworts, rhizocarps and lycopods.

Cryptography (krip-tog'ra-fi), the art of writing in secret characters or cipher, or with sympathetic ink. The simplest method consists in choosing for every letter of the alphabet some sign, or another letter or group of letters. Thus the letter of Charles I to the Earl of Glamorgan with respect to the Catholics of Ireland was composed in an alphabet of 24 strokes variously placed about a line. The names in the records of the Clan-na-Gael Society were, according to the *Times* newspaper, written in a cipher formed by taking in each case the letter previous to that intended; and the cipher devised by Lord Bacon consisted in an alphabet formed by different arrangements of the letters *a* and *b* in groups of five. All these methods, however, are easily deciphered by experts, as also is that employed by the Earl of Argyle in his plot against James II. in which the words of the letter were set down at concerted distances, the intervals being filled up with misleading words. The art of cryptography has much developed in more recent times, and ciphers of great intricacy are frequently used. Even the more complex, however, present, as a rule, but little difficulty to an expert.

Crypton (krip'ton), or KRYPTON, a new element discovered in June, 1898, by Prof. Ramsay, with Lord Rayleigh, joint discoverer of argon. It was obtained from the atmosphere, in which it exists in the proportion of 1 to 20,000,000. Spectrum: chief lines, green and yellow, the latter being nearly coincident with the helium yellow line, D 3.

Crystal (kris'tal), in chemistry and mineralogy, any body which, by the mutual attraction of its particles, has assumed the form of some one of the regular geometric solids, being bounded by a certain number of plane surfaces. The chemist procures crystals either by fusing the bodies by heat and then allowing them gradually to cool, or by dissolving them in a fluid and then



Forms of Crystals.

abstracting the fluid by slow evaporation. The method of describing and classifying crystals now universally adopted is based upon certain imaginary lines drawn through the crystal, and called its *axes*. The classes are as follows: 1st, The *monometric, regular*, or *cubic* system (*a*), in which the axes are equal and at right angles to one another. 2d, The *square prismatic* or *dimetric* system (*b*), in which the axes are at right angles to each other, and while two are equal, the third is longer or shorter. 3d, The *right prismatic, rhombic*, or *trimetric* system (*d*), in which the axes are at right angles to each other, but all are of different lengths. 4th, The *hexagonal* or *rhombohedral* system (*c*), which has four axes, three in one plane inclined to each other at 60°, the fourth perpendicular to this plane. 5th, The *monoclinic* or *oblique* system (*e*), in which two axes are at right angles and the third is inclined to their plane. 6th, The *diclinic* or *doubly oblique system* (*f*), in which two axes are at right angles, the third oblique to both. 7th, The *triclinic* system (*g*), in which the three axes are inclined to each other at any angle other than a right angle. A crystal consists of three parts. 1st, Plane surfaces, called faces, which are said to be similar when they are equal

to one another and similarly situated; dissimilar, when they are unequal or have a different position. 2d. Edges, formed by the meeting of two faces. They are said to be similar when formed by similar faces; dissimilar, by dissimilar faces. Equal edges are formed when the faces are inclined at the same angle to one another; unequal when they are inclined at different angles. 3d. Solid angles, formed by the meeting of three or more faces; and in this case also there are similar and dissimilar, equal and unequal solid angles according as they are formed by similar or dissimilar faces, and equal or unequal angled edges. The angles of crystals are measured by an instrument called the goniometer.

Crystalline Rocks (kris'ta - lIn), rocks of a crystalline texture, such as granite, believed to have acquired this character by the action of heat and pressure.

Crystalloid (kris'ta-loid). See *Dialysis.*

Crystallomancy (kris-tal'lo-man-si), a mode of divining by means of a transparent body, as a precious stone, crystal globe, etc. The operator first muttered over it certain formulas of prayer, and then gave the crystal (a beryl was preferred) into the hands of a young man or virgin, who received an answer from the spirits within the crystal.

Crystal Palace, a notable building erected in 1852-54 at Sydenham, near London, from the materials of the Great Exhibition of 1851, and originally designed as a great educational museum of art, natural history, ethnology, etc. It is composed entirely of glass and iron, and consists of a long and lofty nave intersected at regular distances by three transepts, of which the central is 384 feet long, 120 feet wide, and 168 feet interior height. It lies in about 200 acres of ground, excellently laid out for recreation, and possesses many permanent attractions apart from the annual round of concerts, flower-shows, pyrotechnical displays, etc. Chief among its attractions is the collection of casts of architectural ornaments and sculpture, arranged in the Egyptian, Greek, Roman, Alhambra, Byzantine, Mediæval, Renaissance and Italian Courts.

Csaba (châ'bâ), a town of Hungary, about 110 miles S. E. of Budapest, near the White Körös. Pop. 37.547.

Csongrad (chon'grâd), an active market town of Hungary, at the junction of the Körös with the Theiss, 72 miles S. E. of Budapest. Trade, cattle, cereals, wines, etc. Pop. 22,619.

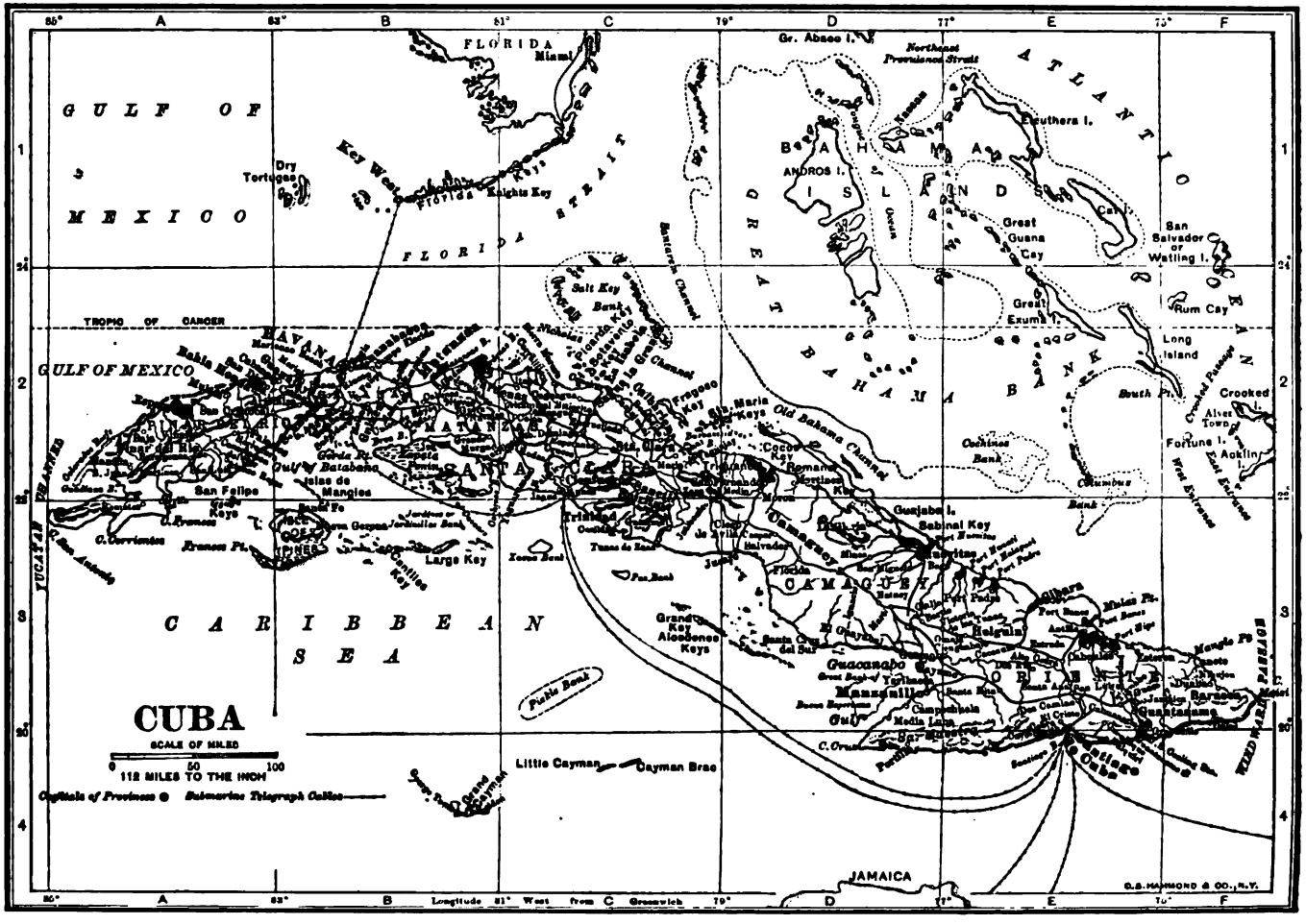
Ctenoid (ten'oid), applied to the scales of fishes when jagged or pectinated on the edge like the teeth of a comb, as in the perch, flounder and turbot.

Ctenophora (ten-of'o-ra), an order of marine animals belonging to the subkingdom Cœlenterata, definable as transparent, oceanic, gelatinous Actinozoa, swimming by means of *ctenophores*, or parallel rows of cilia disposed in comb-like plates. They develop no coral. *Pleurobrachia* (or *Cydippe*) may be taken as the type of the order, which includes the Beroidæ, the Cestum or Venus' girdle, etc.

Ctesias (tē'she-as), a Greek historian of about 400 B.C., contemporary with Xenophon and partly with Herodotus. He was a physician, and lived for seventeen years at the court of Persia. He wrote a *History of Persia*, of which little remains.

Cuba (kū'ba), the largest and most western of the West India Islands, lying at the entrance to the Gulf of Mexico; about 130 miles from Florida and Yucatan. Its length is 750 miles, the breadth varying from 20 to over 120 miles; area 45,881 miles. It formed the richest and most important colony belonging to Spain, but was wrested from that country by the United States in the war of 1898. The island probably had its origin in volcanic action, the Copper Mountains, which run its entire length, clearly demonstrating this. Pico Turquinos is the highest summit, being 7750 feet. From the base of this chain of highland the land expands into meadows with numerous lagoons and swamps. The rivers are small and unnavigable. Good harbors abound with deep water at Havana, Matanzas, Puerto Principe, Santiago, etc.

The climate in the hilly districts is generally healthful and agreeable, but the lowlands are sickly and generally hot. The maximum temperature seldom exceeds 88° F., but the heat is constant, the mean temperature in the lowlands being 78°. The climate is moist, the rainfall being about 90 inches; yet some portions of the interior require irrigation. There are occasional hurricanes and earthquakes. Rain often descends in torrents from July to September, but no snow is known to fall on the highest mountains, though frost occurs occasionally. The most valuable domestic animals are the ox, horse and pig, which form a large proportion of the wealth of the island; the sheep, goat and mule are inferior in


CUBA
SCALE OF MILES
0 50 100
112 MILES TO THE INCH
Capitals of Provinces
Submarine Telegraph Cables
GULF OF MEXICO
CARIBBEAN SEA
FLORIDA
Miami
Key West
Dry Tortugas
Florida Keys
Knights Key
FLORIDA STRAIT
TROPIC OF CANCER
HAVANA
MATANZAS
SANTA CLARA
Gulf of Batabano
Isles de Mangles
San Felipe Keys
Large Key
Cantiles Key
Xocos Bank
Pickle Bank
Little Cayman
Cayman Brac
Grand Cayman
Salt Key Bank
Santaren Channel
Old Bahama Channel
Cochinos Bank
Columbus Bank
Gr. Abaco I.
Northeast Providence Strait
Eleuthera I.
BAHAMA ISLANDS
ANDROS I.
Great Guana Cay
Great Exuma I.
San Salvador or Watling I.
Rum Cay
Long Island
Crooked I.
Fortune I.
Acklin I.
GREAT BAHAMA BANK
ATLANTIC OCEAN
Gulf of Cuba
Guajaba I.
Sabinal Key
Nuevitas
CAMAGUEY
Holguin
Guacanabo
Manzanillo
Campechuela
Santa Cruz del Sur
Santiago de Cuba
Guantanamo
Baracoa
ORIENTE
JAMAICA
YUCATAN CHANNEL
WINDWARD PASSAGE
Longitude 81° West from Greenwich
C.S. HAMMOND & CO., N.Y.

quality and number. The sylvan birds are numerous and in great variety, birds of prey are but few, and snakes and reptiles are not very plentiful. The shores abound in turtle, and alligators are found in the deep gulfs and bays.

Cuba is rich in minerals; these worked are mostly iron and copper. Of the former a large quantity is exported to the United States for admixture with the native ores. Bitumen is plentiful as a liquid and also in a plastic, resinous state. Gold, silver, coal and marble are found in the hilly country. Forests of mahogany, rosewood, cedar, ebony, fustic, palms, etc., abound on the mountains. Large crops of tobacco, sugar, rice, maize, bananas, cotton, coffee, yams and all tropical fruits, together with immense herds of cattle, are raised. Tobacco forms the leading export, sugar having much fallen off by the competition of the beet-sugars of continental Europe and the unsettled state of the island. The sum of exports and imports amounts to about $250,000,000, the exports being very largely to the United States. The manufacture of sugar, molasses, rum and cigars forms the principal industries. Over 2500 miles of railway are in operation, and 5000 miles of telegraph. The Roman Catholic religion was established by the Spanish law; education was made compulsory in 1880, but was not impartially carried out. There are 860 public schools, beside a few schools in the towns and a university at Havana. None of the aboriginal race remain, and but few of the indigenous mammals; of the latter are two species of aguti and an opossum.

Cuba was discovered in October, 1492, by Columbus, and colonized in 1511 by the Spaniards. Hernando, the governor, cruelly treated the natives, an inoffensive race who had received their oppressors with great hospitality, and by 1553 the entire race became extinct. In 1553 the French destroyed Havana; it was rebuilt and strongly fortified in 1554. In 1624 Cuba was taken by the Dutch, but was soon restored to Spain. From 1650 to 1700 ravaged by filibusters, who in 1688 plundered and destroyed Puerto Principe. After 1700 Cuba prospered greatly. The English, with American colonists, captured Havana in 1762, but in 1763 exchanged it for other possessions. It then became a center of the slave trade. Negro insurrections occurred in 1844-48, and over 10,000 negroes were slain in the latter year.

In 1868 commenced an insurrectionary attempt at independence which continued until 1878, and in 1895 another rebellion broke out. In April, 1898, war was declared by the United States against Spain, and in the struggle that ensued Cuba was freed from the dominion of Spain, the United States holding it until it would establish a satisfactory government of its own. This was accomplished in May, 1902, and the United States troops and officials were withdrawn. In 1906 a rebellious disturbance caused the United States to resume a temporary control of the island, but in 1909, a stable republican government being formed, the American troops were withdrawn. Pop. (1915) 2,511,098; capital, Havana, 659,818. In 1917 Cuba declared war against Germany, but took no active part.

Cubeb (kū'beb), the dried unripe fruit of *Cubēba officinālis*, or *Piper Cubēba*, a native of Java and other East India isles, order Piperaceæ.

Cube Root (kūb röt), the number or quantity which, multiplied into itself and then into the product produces the cube; or which, twice multiplied into itself, produces the number of which it is the root: as 2 is the cube root of 8, because twice 2 are 4, and twice 4 are 8.

Cubespar, an anhydrous sulphate of lime.

Cubic Foot, of any substance, so much of it as is contained in a cube whose side is 1 foot.

Cubic Niter, or CHILE SALTPETER, the nitrate of sodium found chiefly in the rainless district of Tarapacá in Chile, where it occurs for the most part mixed with other salts, sand and clay. It crystallizes in obtuse-angled rhombohedra, not in cubes, and is used in considerable quantities both as a dressing for grass and mixed in artificial manures. It has also been used as a source of nitric acid, and after double decomposition with chloride of potassium has been employed in the manufacture of gunpowder.

Cubist (kū'bist), a 20th century school of art, whose disciples endeavor to portray what they feel rather than what they see. The cubist avoids the definite forms to which the eye is accustomed in other styles of delineation, and works for the most part in combinations of angles, straight lines and geometrical figures. Hence the name.

Cucking-stool (kuk'ing stöl), a kind of chair formerly used as an instrument of punishment, frequently confounded with *ducking stool*.

Cuckoo (kų'kö; genus *Cucŭlus*), a scansorial or climbing bird, the type of the family Cuculidæ. The note from which it derives its name is a

love-call used only in the mating season. The greater number of species belonging to the genus are confined to hot countries, more especially India and Africa, though some are summer visitants of colder climates. In America no true cuckoos are found, the genus *Coccyzus*, to which the so-called American cuckoo belongs, differing very essentially from them in its habits. The species best known in Europe, the *Cucŭlus canōrus*, is a bird about the size of a small pigeon, though the length of the tail gives it at a little distance a strong resemblance to a hawk. The adult bird is ashy gray, with a white breast barred across with narrow lines of grayish black; tail spotted and barred with white; bill black, touched at the gape with yellow; eyes and feet yellow. It appears in England about the middle of April, and in May begins to deposit its eggs in the nests of other species, giving the preference to those of the hedge-sparrow, meadow-pipit, or pied wagtail. The young cuckoo ejects from the nest its young companions, and monopolizes the attentions of its foster-parents, which feed it for about five weeks after it is fledged. The young birds do not leave the country until the end of August or even September; but the adult birds commence their flight southward in July or latest early in August. Their food consists chiefly of cockchafers, moths, dragon-flies and caterpillars, though young cuckoos will sometimes eat berries. There appears to be a curious preponderance of male as compared with female birds, a low estimate putting the ratio at about five to one.

Cuckoo-flower, or LADY'S-SMOCK (*Cardamine pratensis*), a common and pretty meadow plant, order Cruciferæ, with pale lilac or white flowers. *C. pratensis* is abundant in Britain, and is found in swamps N. of New York; blossoms in April or May, presenting a very pleasing appearance. It possesses antiscorbutic properties.

Cuckoo-pint, the *Arum maculātum*, popularly known also by the names of 'lords-and-ladies' or 'common wake-robin.' See *Arum*.

Cuckoo-spit, a froth or spume found on plants, being a secretion formed by the larvæ of a small homopterous insect (*Aphrophŏra spumaria*).

Cuculidæ (ku-kū'li-dē), the systematic name of the cuckoo family. See *Cuckoo*.

Cucumber (kū'kum-ber), the fruit of *Cucŭmis sativus*, or the plant itself, belonging to the Cucurbitaceæ or gourd order, and supposed to have been originally imported into Europe from the Levant. Though grown in England in the fourteenth century, it did not become generally used until after the reign of Henry VIII. It is now a common table vegetable in the United States. It is an annual with rough, trailing stems, large, angular leaves, and yellow male and female flowers set in the axils of the leafstalks. Other species of the cucumber genus are *Cucŭmis Melo*, the common melon, and the watermelon, *C. Citrullus*.

Cucumber-tree (*Magnolia acuminata*), a fine American forest tree, so named from the appearance of its fruit.

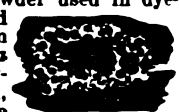
Cucurbit (kū-kur'bit). See *Alembic*.

Curcurbita (kū-kur'bi-ta), the typical genus of the order Cucurbitaceæ. The pompion or pumpkin gourd is *C. Pepo*.

Cucurbitaceæ (kū-kur-bi-tā'se-ē), the gourd order, consisting of large herbaceous plants, annual or perennial, with alternate leaves palmately veined and scabrous, and unisexual flowers. The corolla is monopetalous, regular, and with five lobes; the petals are usually either yellow, white, or green, and deeply veined; the fruit fleshy and succulent. The stems are scabrous, and the general habit is climbing or trailing, by means of tendrils. To this family belong the melon, gourd, cucumber, colocynth, bryony, etc.

Cudahy (kud'a-hi), a city of Milwaukee Co., Wisconsin, on Lake Michigan, 6 miles S. of Milwaukee. It has numerous manufactures, including machinery, vinegar, rubber goods, etc. Pop. (1920) 6725.

Cudbear (kud-bār), a purple or violet colored powder used in dyeing violet-purple and crimson, prepared from the *Lecanŏra tartarĕa* and other lichens growing on rocks in Sweden, Scotland, etc. The color, however, is somewhat fugitive, and in Britain it is used chiefly to give strength and brilliancy to the indigo blues. There is little essential difference between cudbear and archil. It is also used to give a crimson color to pharmaceutical preparations.



Cudbear Plant. (*Lecanora tartarea*).

Cuddalore (kud-da-lōr'), or KUDALUR, a maritime town in Hindustan, presidency of Madras and district of South Arcot, 86 miles S. of Madras. It was formerly a place of great strength and importance, and still carries on a large land trade with Madras in indigo, oils and sugar. It

also exports grain and rice. Pop. 52,216.

Cuddapah (kud'dă-pä), or KADAPA, a district and town of Hindustan, presidency of Madras. The district, of which the area is 8745 sq. miles, is traversed N. to S. by the Eastern Ghauts, and watered by the Pennar and its affluents. The forests contain much valuable timber, and the minerals include iron ore, lead, copper, diamonds, etc. Agriculture is in a flourishing condition, grain, cotton and indigo being largely grown. Pop. 1,291,267.—The town lies on a small river of same name, an affluent of the Pennar, 140 miles N. W. of Madras. It exports indigo and cotton. Pop. (1901) 16,432.

Cudweed (kud'wēd), the popular name in Britain for certain plants covered with a cottony pubescence, and belonging to the genera *Gnaphalium*. *G. polycephalum*, the cottonweed, is common in fields in the United States.

Cudworth (kud'wurth), RALPH, an English divine and philosopher, born in 1617. He took his degree and fellowship at Cambridge in 1639; in 1644 was chosen master of Clare Hall; in the following year regius professor of Hebrew; and in 1654 master of Christ's College, Cambridge, where he spent the rest of his life. In 1678 he published his *True Intellectual System of the Universe, wherein all the Reason and Philosophy of Atheism is Confuted, and its Impossibility Demonstrated* (folio)—a work of an exceedingly erudite kind, though tediously discursive in argument. He died in 1688.

Cuenca (kwān'ka), a city of Spain, in New Castile, capital of Cuenca province, 85 miles E. S. E. Madrid. Pop. 10,756. It was built by the Moors, stands on a craggy hill, and has a remarkable cathedral. It was formerly celebrated for its art manufactures. Pop. of the province, 249,696; area, 6636 square miles.

Cuenca, a town of Ecuador, the third in point of importance in the country, with a cathedral and university. It has extensive sugar refineries, potteries and woolen factories. Pop. (1908 estimate) 30,000.

Cueva (kwā'vȧ), JUAN DE LA, a Spanish poet, born about the middle of the sixteenth century. His works comprise several tragedies, a heroic poem, a large number of lyrics and ballads, and the first Spanish didactic poem —on the *Art of Poetry*. No details are known of his life.

Cufic (kū'fik), a term derived from the town of Cufa or Kufa in the pashalic of Bagdad, and applied to a certain class of Arabic written characters. The Cufic characters were the written characters of Arabian alphabet in use from about the sixth century of the Christian era until about the eleventh. They are said to have been invented at Cufa, and were in use at the time of the composition of the Koran. They were succeeded by the Neskhi characters, which are still in use. Under the name of *Cufic coins* are comprehended the ancient coins of the Mohammedan princes, which have been found in modern times to be important for illustrating the history of the East. They are of gold (*dinar*), silver (*dirhem*), and brass (*fals*), but the silver coins are most frequent, and numbers of them have been discovered on the shores of the Baltic, and in the central provinces of European Russia.

Cuirass (kwi-ras'), an article of defensive armor, protecting the body both before and behind, and composed of leather, metal, or other materials variously worked. It was in common use throughout Europe in the fourteenth century. In England it fell into disuse in the time of Charles II, and in France a little later. It was reintroduced by Napoleon I, and the achievements of his cuirassiers led to its adoption for regiments of heavy cavalry in most European armies. See *Arms* and *Armor*.

Cuir-bouilly (k w ēr-bō-i-li), leather softened by b o i l i n g, then impressed with ornaments, used for shields, girdles, sword-sheaths, coffers, purses, shoes, and many other articles; also, in the sixteenth century, for hangings for rooms gilded and painted, and, when heightened by gold or silver, known as *cuir doré* or *cuir argenté*.

Cuishes, or CUISSES (kwish'es, kwis'ez), defensive armor for the thighs, originally of buff leather, which was gradually superseded by plate iron or steel. Cuishes were introduced into England about the middle of the fourteenth century.

Cujas (k ü-z h a s), JACQUES, or CUJACIUS, a distinguished French jurist, born about 1520; long professor of law at Bourges; died in 1590. He owed his reputation to the light shed by him on Roman law. He was the founder of the historical legal school, if not of scientific jurisprudence.

Culdees (kul'dēz), a religious order which at an early period had establishments in many parts of Great Britain and Ireland, but are especially spoken of in Scotland. The name is of uncertain etymology; but is probably

from Celtic words meaning 'attendant of God.' It first appears in the eighth century, and the Culdees distinctively so called seem to have been anchorites living under their own abbots and for long remaining independent of Rome. Otherwise archæologists have discovered no essential point either of faith, ritual or constitution in which they differed from the other clergy of the western church.

Culicidæ (kū-li'-si-dē), a subfamily of dipterous insects, family Tipulidæ. The genus Culex comprehends the common gnat and the mosquito.

Culilawan Bark (kū-lil'a-wan), a valuable aromatic, pungent bark, derived from *Cinnamōmum Culilawan*, a tree of the Moluccas, useful in indigestion, diarrhea, etc. Called also clove-bark.

Cullen, WILLIAM, physician and medical writer, born at Hamilton, Lanarkshire, in 1710. In 1740 he took the degree of M.D., was appointed in 1751 regius professor of medicine in the University of Glasgow. He died in 1790. His principal works are: *Lectures on the Materia Medica, Synopsis Nosologiæ Methodicæ,* and *First Lines of the Practice of Physic.*

Cullera (kūl-yā'rà), a town of Spain, province and 25 miles S. by E. of Valencia. Pop. 11,947.

Cullinan Diamond, an immense diamond found in the Transvaal, in the mines of the Premier Diamond Mining Company, where it was discovered in 1905. Before cutting, its length was 4½ inches; height, 2¼ inches; breadth, 2½ inches; total uncut weight 3253¾ carats, or over a pound and a half. It was bought by the South African government for $1,000,000 and presented to King Edward VII. Subsequently it was cut into a number of gems, the largest of which weighed 516¼ carats, and another 309 3/16 carats.

Culloden Moor (kul-lod'en), a heath in Scotland, 4 miles E. of Inverness, celebrated for the victory obtained April 16, 1746, by the Duke of Cumberland over Prince Charles Edward Stuart (the Pretender) and his adherents. The battle was the termination of the attempts of the Stuart family to recover the throne of England.

Culm, in botany, the jointed and usually hollow stem of grasses, generally herbaceous, but woody and treelike in the bamboo.

Culmination (kul-mi-nā'shun), in astronomy, the passing of a star through the meridian, because it has at that moment reached the highest point (*culmen*) of its apparent path in the sky. Two culminations take place in the course of the day, one above and the other below the pole.

Cultivator (kul'ti-vā-tur), an agricultural implement with long, strong, broad-pointed iron teeth or tines, for tearing up or loosening the soil; also called a horse-hoe.

Culverin (kul'vėr-in), a long and slender cannon used in the sixteenth century. It generally carried a ball of about 18 lbs.; the demiculverin carried one of about half that weight.

Cumæ (kū'mē), a very ancient city of Italy, in Campania, the oldest colony of the Greeks in Italy, founded about 1030 B.C. by colonists from Chalcis, in Eubœa, and from Cyme (Greek, *Kumē*) in Asia Minor. It founded Naples (Neapolis), and in Sicily Zancle or Messina. In 420 B.C. Cumæ was taken by the Campanians, and with them came under the power of Rome (345 B.C.) It was destroyed A.D. 1207, and a few ruins only now exist.

Cumaná (kō-ma-nä), a town of Venezuela. It is the oldest European city in South America, having been founded in 1523. It lies near the mouth of the Gulf of Cariaco, and has a good roadstead in Cumana Bay, with a trade in cacao, sugar, tobacco, etc. Pop. 12,051.

Cumberland (kum'bėr-land), the extreme northwestern county of England. Area, 1520 sq. miles There is great variety of surface in different parts. Two ranges of mountains may be traced—one towards the north, to which belongs the ridge called Crossfell (2892 ft.); and the other to the southwest, of which the highest peak is Skiddaw (3058 ft.). The two largest rivers are the Eden and the Derwent. The county embraces part of the 'Lake Country' of England. Cumberland is rich in minerals, including lead, gypsum, zinc and especially coal and rich hematite iron-ore. In the western division of the county there are a great many blast-furnaces, and works for the manufacture of steel and finished iron. The principal crops raised are oats, barley, wheat and turnips, but the bulk of the enclosed lands is sown in clover and grass. The rearing of cattle and sheep and dairy farming are engaged in to a considerable extent. Carlisle is the county town; the other principal towns are the seaports Whitehaven, Workington and Maryport; and the inland towns Penrith, Cockermouth and Keswick. Pop. (1911) 265,780.

Cumberland, a town of Providence Co., Rhode Island, in the northeast of the State. It manu-

factures, cotton, horseshoes, etc., and is in a mineral-bearing region. Pop. 10,077.

Cumberland, a city, county seat of Allegheny Co., Maryland, on the Potomac, 178 miles W. N. W. of Baltimore. It is on the edge of the great Cumberland coal basin, and iron is largely worked in the vicinity. There are iron, steel, glass, cement and other manufactures. Pop. (1910) 21,839; (1920) 29,837.

Cumberland, a river of the United States which runs through Kentucky and Tennessee into the Ohio, having a course of about 600 miles, navigable for steamboats, 200 miles.

Cumberland, RICHARD, a notable dramatic writer, born at Cambridge, England, in 1732. After studying at Westminster and Cambridge he became private secretary to Lord Halifax, who bestowed on him a few years later a clerkship of reports in the office of trade and plantations. After one or two failures in writing for the stage, his *West Indian*, brought out by Garrick in 1771, proved eminently successful, and it was followed by the less popular *Fashionable Lover*, *The Choleric Man*, *The Note of Hand* and *The Battle of Hastings*. In 1775 he became secretary to the board of trade, and in 1780 was employed on a mission to Lisbon and Madrid, but failing to satisfy the ministry was compelled to retire. In addition he wrote several novels, poems, etc. He also edited the *London Review*. He died in 1811.

Cumberland, WILLIAM AUGUSTUS, DUKE OF, second son of George II of England, born in 1721. At the battle of Dettingen he was wounded when fighting at the side of his father, and though unsuccessful at Fontenoy, where he had the command of the allied army, he rose in reputation by somewhat brutually subduing the insurrection in Scotland caused by the landing of Charles Edward Stuart in 1745. In 1747 Cumberland was defeated by Marshal Saxe at Lafeld, and in 1757 he lost the battle of Hastenbeck, against D'Estrées, and concluded the convention at Closterseven, by which 40,000 English soldiers were disarmed and disbanded, and Hanover placed at the mercy of the French. He then retired in disgrace from his public offices, and took no active part in affairs. He died in 1765.

Cumberland Gap, a narrow passage about 500 feet wide through the Cumberland Mountains between Kentucky and Tennessee and at the western extremity of Virginia. It was the scene of important military incidents during the Civil War.

Cumberland Mountains, in Tennessee part of a range of the Appalachian system, rarely exceeding 2000 feet in height.

Cumberland Presbyterian Church, a religious denomination founded in 1810 during a revival in Tennessee. They accepted the Presbyterian creed with the exception of predestination. In 1906, when they united with the Northern church, they had 2922 churches, with 227,600 members, including 42,000 colored membership.

Cumbrae, or CUMBRAY (kum-brā'), the GREATER and LESSER, two Scottish islands in the Firth of Clyde, belonging to the county of Bute. They are both small, the only town being Millport, a seaside resort.

Cumbria (kum'bri-a), an ancient British principality, comprising, besides part of Cumberland, the Scotch districts Galloway, Kyle, Carrick, Cunningham and Strathclyde, its capital being Alcluyd or Dumbarton. It was possibly at one time the chief seat of the (legendary) kingdom of Arthur, and in the sixth century was an important and powerful kingdom. It speedily, however, fell under Saxon domination, and early in the eleventh century was given by Edmund of Wessex to Malcolm of Scotland to be held as a fief of the crown of England. The name still survives in Cumberland.

Cumbrian Mountains (kum'-bri-an), a range of hills in England, occupying parts of the counties of Cumberland, Westmoreland, and North Lancashire The mountains rise with steep acclivities, enclosing in some parts narrow but well-cultivated valleys, with numerous picturesque lakes, this being the English 'Lake Country' so much frequented by tourists.

Cumin, or CUM'MIN (kum'in), an umbelliferous plant (*Cuminum Cyminum*) which grows wild in Egypt and Syria, and is largely cultivated in Sicily and Malta, whence it is exported. The fruit, called cumin seeds, is of a light-brown color, with an aromatic smell and caraway-like taste, and possesses stimulating and carminative properties.

Cumming (kum'ing), JOHN, born in 1810 at Aberdeen, where he graduated. At the age of twenty-two he became minister of the Scotch Church, Crown Court, Covent Garden, London, where he labored for half a century, publishing during that period

over two hundred works. He had a high reputation as an orator, but he was most widely known latterly in connection with his prophecies of the speedy coming of the end of all things. His most popular works were: *The Great Tribulation*, *The Redemption Draweth Nigh*, *Apocalyptic Sketches* and *Voices of the Night*. Died in 1881.

Cumming, ROUALEYN GEORGE GORDON, the 'Lion-hunter,' a Scottish sportsman and writer, born in 1820; died at Fort Augustus, in Scotland, in 1866. He entered the army, served some years in India, joined the Cape Rifles, and from 1843 till 1849 made five hunting expeditions into various parts of Africa. Records of his adventures are to be found in his *Five Years of a Hunter's Life* (1850), and the *Lion Hunter of South Africa* (1856).

Cummins, (kum'ins), ALBERT BAIRD, American legislator, born in Carmichaels, Pa., in 1850. He was governor of Iowa, 1902-08; elected U. S. Senator (Republican) in 1908 to succeed W. B. Allison, and reëlected in 1909.

Cumulative Vote (kūm'ū-la-tiv), the system by which every voter is entitled to as many votes as there are persons to be elected, and may give them all to one candidate, or may distribute them among the candidates, as he thinks fit. The principle was first introduced into Britain by the Elementary Education Act of 1870, and has been applied on school board, and later in parliamentary elections. It has been advocated for many years in the United States and has been employed to a minor extent in Illinois and Michigan. The supreme court of Michigan pronounced it constitutional in 1891.

Cumyn (kum'in), COMYN, or CUMMING, a family whose name appears frequently in the early history of England and Scotland. It had its original possessions near the town of Comines in France, and from one of the branches sprang the historian Philip de Comines. The English Comyns came over with William the Conqueror, and Robert Comyn was sent by William to reduce the northern provinces. His nephew became chancellor of Scotland about 1133, and in the middle of the thirteenth century the family counted among its members four Scottish earls. In the beginning of the fourteenth century it was almost annihilated by Robert Bruce, who slew the son of its head (the Lord of Badenoch) in Dumfries. The Comyns who escaped settled down in the English court, and established important connections. See *Comyn*.

Cundinamarca (kön-di-na-mär'ka), one of the departments of the Republic of Colombia. Area, estimated 7,510 square miles; pop. 537,658.

Cundurango (kun-du-ran'go), the name given in Ecuador to a plant found in Loya province. It is also found in Colombia and is claimed to be useful in the cure of cancer, scrofula and other blood diseases. Its virtues are said to have been discovered by accident, an Indian woman administering it to her husband, who was suffering from internal cancer. Her purpose was to poison him and put him out of his misery, but instead of dying he became quite cured. Despite this story, however, the actual value of the plant is in question.

Cuneiform Writing (kū-nē'i-form; Lat. *cuneus*, a wedge, and *forma*, a shape), the name applied to the wedge-shaped characters of the inscriptions on old Babylonian and Persian monuments; sometimes also described as *arrow-headed* or *nail-headed* characters. They appear to have been originally of the nature of hieroglyphs,

Part of a Babylonian Brick Bearing Cuneiform Writing.

and to have been invented by the primitive Accadian inhabitants of Babylonia (a probable Turanian race), from whom they were borrowed with considerable modification by the subsequent Babylonians and Assyrians, who were Semites by race and spoke an entirely different language. The use of the character, however, ceased shortly after the reign of Alexander the Great; and after the lapse of nearly two thousand years it was doubted by many if the signs had ever had an intelligible meaning. They were even regarded by some as the work of a species of worm, by others as mere talismanic signs, astrological symbols and the like. The first hints towards decipherment were given by Karstens Niebuhr late in the eighteenth century; and the labors of Grotefend, Rask, Burnouf, Lassen, Rawlinson and other investigators slowly perfected the means of translation. Most of the inscriptions

first discovered were in three different languages and as many varieties of cuneiform writing, the most prominent, and at the same time the simplest and latest, being the Persian cuneiform writing with about sixty letters. Next older in time and much more complex is what is designated the Assyrian or Babylonian system of writing, consisting of from 600 to 700 characters, partly alphabetic, partly syllabic, or representing sound groups. Finally comes the Accadian inscriptions, the oldest of all, originally proceeding from a people who had reached a considerable degree of civilization more than four thousand years before Christ, and whose language (allied to Turkish) ceased to be a living tongue about 1700 B.C. The most celebrated trilingual inscription is that at Behistun, in Persia, cut upon the face of a rock 1700 feet high, and recording a portion of the history of Darius. The British Museum contains many thousands of inscribed clay tablets, cylinders, prisms, etc., the decipherment of which is in progress. Many have also been collected by American investigators, and the University of Pennsylvania has a rich collection of inscriptions. See also *Assyria*.

Cunene (ku-nē'ne), a river of South Africa, which enters the Atlantic after forming the boundary between the Portuguese and German territories there.

Cuneo. See *Coni*.

Cunningham (k u n'i n g-h a m), the northern and most fertile district of Ayrshire, Scotland.

Cunningham, ALLAN, poet, born in 1785, at Blackwood in Dumfriesshire, Scotland; apprenticed in his eleventh year to a stonemason. Having been employed by Cromek to collect materials for his *Remains of Nithsdale and Galloway Song*, he sent instead his own productions, which were printed, but quickly recognized as being forgeries. He then proceeded to London, where he at first supported himself by journalism, but afterwards obtained a situation in the studio of Chantrey, with whom he remained till his death. His later works comprise the drama of *Sir Marmaduke Maxwell;* the novels of *Paul Jones* and *Sir Michael Scott;* the *Songs of Scotland;* his *British Painters, Sculptors, and Architects* (1829); and lives of Burns and Mary, Queen of Scots. He died at London in 1842.—His son PETER (1816-69) is also known as the author of a series of works, including *The Story of Nell Gwynne, Life of Drummond of Hawthornden, Modern London, Life of Inigo Jones*, etc. He also edited *Walpole's Letters, Goldsmith's Works*, etc., and contributed to many periodicals and magazines.

Cunningham, WILLIAM, Scottish divine, famous for rousing speeches and pamphlets; born in 1805; died in 1861. He visited the United States in 1843 to collect information with regard to theological institutions.

Cupel (kū'pel), a small, shallow, porous, cup-like vessel, used in assays, to separate the precious metals from their alloys. See *Assaying*.

Cupid (kū'pid; Lat. *Cupido*), the god of love; corresponding with the Greek Erōs. He is represented as a winged infant, naked, armed with a bow and a quiver full of arrows.

Cupola (kū'pō-la), in architecture, a spherical vault on the top of an edifice; a dome or the round top of a dome. The Italian word *cupola* signifies a hemispherical roof which covers a circular building, like the Pantheon at Rome and the Round Temple of Vesta at Tivoli. The term is also applied distinctively to the concave interior as opposed to the dome forming its exterior. See *Dome*.

Cupping (kup'ing), a surgical operation consisting in the application of the cupping-glass in cases where it is desirable to abstract blood from, or draw it to, a particular part. When blood is removed the operation is termed *cupping* or *wet-cupping;* when no blood is drawn, it is *dry-cupping*. The cupping-glass, a cup-shaped glass vessel, is first held over the flame of a spirit-lamp, by which means the included air is rarefied. In this state it is applied to the skin, and as the heated air cools it contracts and produces a partial vacuum, so that the skin and integuments are drawn up slightly into the glass and become swollen. If blood is to be drawn, a scarificator or spring-lancet is generally used.

Cupressus. See *Cypress*.

Cupuliferæ (kū-pū-lif'e-rē), a botanical order, so named from the peculiar husk or cup (*cupule*) in which the fruit is enclosed. They are trees or shrubs, inhabiting chiefly the temperate parts of the northern hemisphere, and common in Europe, Asia and North America. The chief genera are the oak, chestnut, beech and hazel.

Cur, the name loosely given to any worthless dog of mongrel breed,

but applied more strictly to a cross between the sheep-dog and terrier.

Curaçao (kŏ-rä-sä'ō'), an island of the Dutch West Indies, in the Caribbean Sea, 46 miles N. of the coast of Venezuela; 36 miles long and 8 miles broad; capital Willemstad, principal harbor Santa Anna. It is hilly, wild and barren, with a hot, dry climate. Yellow fever has visited it every sixth or seventh year. Fresh water is scarce, and serious droughts occur. The tamarind, cocoa-palm, banana and other useful trees are reared—among them three varieties of orange, from one of which the Curaço liqueur is made. Sugar, tobacco, cochineal and maize are also produced, but the staple exports are salt, and a valuable phosphate of lime used as a manure in its natural state, or made to yield valuable superphosphates. The islands of Curaçao, Bonaire, Oruba (or Aruba), the Little Curaçao form a Dutch government, the residence of the governor being at Willemstad. From the sixteenth century Curaçao was held in succession by the Spaniards, Dutch and British, and finally ceded to Holland at the general peace in 1814. Pop. 29,718; including the dependencies, about 50,000.

Curaçao, or CURAÇOA, a liqueur or cordial prepared from a peculiar kind of bitter orange growing in Curaçao, which has a persistent aromatic odor and taste. It is prepared from the yellow part of the rind, which is steeped in strong alcohol, the infusion being afterwards distilled and rectified and mixed with syrup. For the true orange, the common bitter orange of Europe is often substituted, and the genuine deep-yellow color imitated by caramel, etc.

Curari (kŏ'rä-ri), CU'RARA, URARA, WOORALI, the well-known arrow-poison used by the Indians of Spanish Guiana and of Northern Brazil. It is the aqueous extract of a tree, the *Strychnos toxifĕra*, thickened with mucilaginous matter; and its properties are such that if introduced into a scratch or puncture of the skin, so as to mix with the blood, it causes death by paralysis of the nerves of the respiratory organs. It may, however, be introduced in moderate doses into the alimentary canal without injury, and animals killed by it are wholesome as food. The active principle is called *curarin*.

Curassow (kū-ras'sō), or Hocco, the name given to gallinaceous birds of the genus *Crax*, family Cracidæ; natives of the warm parts of America. The crested curassow (*Crax alector*), found in Guiana, Mexico and Brazil, is a handsome bird, nearly as large as the turkey and more imposing in appearance, being of a dark-violet color, with a purplish-green gloss above and

Crested Curassow (*Crax alector*).

on the breast; the abdomen is snow white, and the crest golden. Another species is the red curassow (*Crax rubra*), also a native of South America, and about the size of a turkey. The cushew-bird (*Urax pauxi*) is called the galeated curassow.

Curate (kū'rāt), properly an incumbent who has the care of souls; now generally restricted to signify the substitute or assistant of the actual incumbent. In the Church of England curacies are either *stipendary* or *perpetual*. A stipendiary curate is one who is hired by the rector or vicar to serve for him and may be removed at pleasure; a perpetual curate is one who is not dependent on the rector, but is supported by a part of the tithes or otherwise. The perpetual curacy is practically a vicarage. In the Protestant Episcopal Church in America the office of curate corresponds in the main to that of the English curate.

Curator (kū-rā'tur), in civil law, the guardian of a minor who has attained the age of fourteen, of persons under various disabilities, or of the estate of deceased or absent persons and insolvents.—In learned institutions the person who has charge of the library or collections of natural history, etc.

Curb, the general term for a hard swelling on a horse's leg. It consists of a strain of the straight ligament which runs down the back of the hock.

Curb-roof, in architecture, a roof in which the rafters, instead of continuing straight down from the ridge to the walls, are at a given height received on plates, which in their turn are supported by rafters less in-

clined to the horizon, so that this kind of roof presents a bent appearance, whence its name. Called also a *Mansard roof*, from the name of its inventor.

Curb-sender, an automatic signaling apparatus invented by Sir W. Thomson of Glasgow and Prof. Fleeming Jenkin of Edinburgh, and used in submarine telegraphy. The message is punched on a paper ribbon, which is then passed through the transmitting apparatus by clockwork. The name is due to the fact that when a current of one kind of electricity is sent by the instrument another of the opposite kind is sent immediately after to curb the first, the effect of the second transmission being to make the indication produced by the first sharp and distinct, instead of slow and uncertain.

Curcas. See *Physic-nut.*

Curculionidæ (kur-kū-li-on'i-dē), the weevils or snout-beetles, one of the most extensive families of coleopterous insects. See *Weevil.*

Curcuma (kur'kū-ma), a genus of plants of the ginger family, of which *C. longa* yields *tumeric*, *C. zedoaria*, zedoary.

Curd. See *Cheese* and *Milk.*

Curfew (kur'fū; Fr. *couvre-feu*, cover fire), a practice originated in England by William the Conqueror, who directed that at the ringing of the bell at eight o'clock all fires and lights should be extinguished. The law was repealed by Henry I in 1100, but the bell continued to be rung in many districts to modern times and probably may still be heard. The name was also given formerly to a domestic utensil for covering up a fire. In the United States an ordinance establishing a curfew, with the purpose of keeping young people off the streets, has existed in Salem, Massachusetts, since Puritan days. Similar ordinances have of late been adopted in other cities, in general providing that children under 15 shall not frequent the streets after 9 o'clock in summer and 8 in winter.

Curfew for Fire.—Demmin's Encyc. des Beaux Arts.

Curia (kū'ri-a), Papal, in its stricter sense the authorities which administer the papal primacy; in its common wider use all the authorities and functionaries forming the papal court. The different branches of the curia having respect to church government are the sacred congregation of cardinals, the secretariat of state, and the vicariate of Rome, the machinery employed being supplied by the chancery, the dataria, and the camera apostolica. As 'supreme judge' in Christendom the pope acts through special congregations and delegated judges, or through the regular tribunals of the rota and segnatura, and the penitentiaria. The institution of the papal chapel and the household of the pope (*familia pontifica*) are also classed as departments of the curia; and finally the functionaries maintaining the external relation of the pope—legates, nuncios, apostolic delegates, etc. Formerly the curia included also the mechanism and functions of secular administration.

Curiatii. See *Horatii.*

Curico (kū-ri-kō), a town of Chile, capital of province of same name. Pop. 14,577. Area of province, 2978 sq. miles; pop. 119,811.

Curie (kü-rē), Pierre, physicist and chemist, professor of physics in the Sorbonne, born near Paris, 1859. He aided his wife, Marie (born in Poland in 1867), in the analytical study of pitchblende, through which, in 1898, the remarkable element radium was discovered. Only the bromide of this was known until 1910, when Madame Curie succeeded in isolating the metal. He was killed accidentally in Paris, April 19, 1906, and Madame Curie was elected to succeed him as professor.

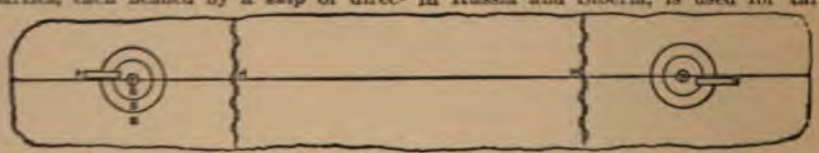
Curie, Marie. See *Radium* and previous article.

Curitiba (kö-ri-tē'ba), a town of S. Brazil, capital of the province of Paraná, connected by railway with the port of Paranagua. Pop. 24,553.

Curlew (kur'lū; *Numenius*), a genus of birds belonging to the order Grallatores, or Waders, and of the same family (*Scolopacidæ*) as the snipe and woodcock. The genus is characterized by a very long, slender and arcuated bill, tall and partly naked legs, and a short, somewhat rounded tail. The bill is more or less covered with a soft, sensitive skin by which the bird is enabled to detect its food in the mud. Two species of curlew inhabit the British Isles, the curlew proper, called in Scotland the 'whaup' (*Numenius arquāta*), and the whimbrel (*N. phæopus*). They feed on various worms, small fishes, insects and molluscous animals, and are very shy, wary birds. Three species of

curlew are inhabitants of America—the long-billed curlew (*N. longirostris*), about 29 inches long, with a bill 7 to 9 inches in length; the Hudsonian, or short-billed curlew (*N. Hudsonicus*); and the Esquimaux curlew (*N. borealis*).

Curling (kurl'ing), a favorite Scottish winter amusement on the ice, in which contending parties slide large smooth stones having somewhat the shape of a flattened hemisphere, weighing from 30 to 45 lbs. each, with an iron or wooden handle at the top, from one mark to another. The space within which the stones move is called the *rink*, and the hole or mark at each end the *tee*. The length of the rink from tee to tee varies from 35 to 50 yards. The players are arranged in two parties, each headed by a *skip* or director. The number of players upon a rink is eight or sixteen—eight when the players use two stones each, and sixteen when they use one stone each. There may be one or more rinks according to the number of curlers. The object of the player is to play his stone as near to the mark as possible, to guard that of his partner which has been well laid before, or to strike off that of his antagonist. When the stones on both sides have been all played the stone nearest the tee counts one, and if the second, third, fourth, etc., belong to the same side, each counts one more, the number played for being generally twenty-one. If a player's stone does not cross a line, called the *hog-score*, at some distance in front of the tee his shot goes for nothing and the stone is removed from the rink. The set matches are termed *bonspiels*. The game is now played in England, Canada, and elsewhere.



Curling Rink. T, Tee. R R, Rings round Tee called the Trough. F, Footboard. H, Hog-score.

Curran (kur'an), John Philpot, an Irish advocate and orator, born at Newmarket, near Cork, in 1750. He was educated at Trinity College, Dublin, went to London, was called to the bar, and during the administration of the Duke of Portland was raised to the bench. In 1784 he was chosen a member of the Irish House of Commons. His eloquence, wit and ability soon made him the most popular advocate of his age and country. On a change of ministry during the vice-royalty of the Duke of Bedford his patriotism was rewarded with the office of master of the rolls, which he held till 1814, when he retired with a pension of £3000 a year. He died at Brompton in 1817. A collection of his forensic speeches was published in 1805.

Currant (kur'ant), the name of two well-known shrubs, order Grossulariaceæ, cultivated in gardens for their fruit. The red currant, *Ribes rubrum*, the fruit of which is used principally for tarts and jellies, is a native of Southern Europe, Asia and North America. The white currant is a cultivated variety of the red, and is used chiefly for dessert and for conversion into wine. The black currant, *R. nigrum*, a native to most parts of Europe, and found abundantly in Russia and Siberia, is used for tarts and puddings and for a fine jelly recommended in cases of sore throat. Many species are indigenous in America, one of them the ornamental *Ribes aureum*, which produces a fine berry. In Australia the name is given to *Leucopogon Richei*, one of the Epacridaceæ, and in Tasmania to certain species of *Coprosma*, of the nat. order Cinchonaceæ. The Indian currant of America is the snowberry, *Symphoricarpus racemosus*. See also *Currants*, where the origin of the name is given.

Currants (from *Corinth*, being brought from the adjoining parts of Greece), a small kind of dried grape imported from the Levant, chiefly from the vicinity of Patras in the Morea, and also from Zante, Cephalonia and Ithaca, of which islands they are the staple produce. The plant is delicate and the crop precarious, and as the plantation must be six or seven years old before it bears, its cultivation requires a great outlay of capital. After being dried the currants are exported in large butts. They are now also a product of California.

Currant Wine, a wine made of the juice of the white or red currant (preferably the former). A pint of water is added to every four pints of berries and afterwards a pound and a half of sugar to each pint, a little spirits being mixed in the liquor before

it is set aside to ferment. Fermentation requires several weeks, and the wine is not fit for use for some months. For black-currant wine the berries are first put over the fire and heated to the boiling point in as small a quantity of water as possible.

Currency (kur'en-si), any medium of exchange by which the processes of trade are facilitated. Originally all exchanges may be supposed to have been made directly by barter, one commodity being exchanged for another according to the convenience of the particular holders. In barter, however, it would obviously often be difficult to find two persons whose disposable goods suited each other's needs, and there would also arise difficulties in the way of estimating the terms of exchange between unlike things, and of subdividing many kinds of goods in the barter of objects of different value. To obviate these some special commodities in general esteem and demand would be chosen as a medium of exchange and common measure of value, the selection varying with the conditions of social life. In the hunting state furs and skins have been employed by many nations; in the pastoral state sheep and cattle are the chief negotiable property. Articles of ornament, corn, nuts, olive oil, and other vegetable products, cotton cloth, straw mats, salt, cubes of gum, bees'-wax, etc., have all been at various times employed to facilitate exchange. These, however, while removing some of the difficulties attendant upon barter, would only partially solve others. It would be felt by degrees that any satisfactory medium must not only possess utility and value, but it must be portable, not easily destructible, homogeneous, readily divisible, stable in value, and cognizable without great difficulty. The metals would naturally commend themselves as best satisfying these requirements, and accordingly in all historical ages gold, silver, copper, tin, lead and iron have been the most frequent materials of currency. The primitive method of circulating them appears to have consisted simply in buying and selling them against other commodities by a rough estimation of the weight or size of the portions of metal. Sometimes the metal was in its native state (*e. g.*, rough copper or alluvial gold dust), at others in the form of bars or spikes, the first approximation to a coinage being probably rudely shaped rings. The earliest money was stamped on one side only, and rather of the nature of stamped ingots than coins as we know them. The chief desiderata influencing the subsequent development of coinage were the prevention of counterfeiting, the prevention of any fraudulent subtraction of metal from the coin, the removal as far as possible of anything likely to occasion loss of metal in the wear and tear of usage, and the production of an artistic and historical monument of the state issuing the coin. Hence the elaboration of designs to cover the whole of a given portion of metal, and the nicer determination of quality, size, degree of relief, inscription, etc. While, however, metallic money of a guaranteed standard value was at an early period found to facilitate in a high degree the mechanism of exchange, it was speedily discovered that it was possible in large part to replace the standard gold or silver or copper coins by various forms of currency of a representative character. The standard money depended solely for its value in exchange upon the value of the material of which it was composed; its metallic value and its nominal value were coincident; the representative money derived its value from a theoretical convertibility at will into the standard coin. Thus in token coins the metallic value may be much less than the nominal value, which is defined by the fact that they can either by force or law or custom be exchanged in a certain fixed ratio for standard coins. Gradually a series of devices came to be employed to further the interchange of commodities with the least friction, and the least possible actual use of the coinage except as a standard and common denominator of value in terms of which exchanges were made. Even in home transactions, but especially in international transactions, the use of actual specie was found to involve a loss of interest and a risk of still more serious loss, and a paper currency based upon credit offered the readiest solution of the difficulty. In this way bank-notes, bills of exchange, and checks—warrants or representative documents convertible, if desired, into standard coin—took their place alongside the metallic currency, partly displacing it, partly extending and supplementing it.

The requisites of circulation are that the monetary issues, whether of coin or paper, shall be from a recognized or official source, and that they admit of being freely returned when necessary to the source from which they are issued. The certification of the fineness of the masses of metal circulating in a community, and the protection from adulteration and fraud, clearly fall among

the necessary acts of police. It is still argued, as by Herbert Spencer in his *Social Statics*, that the coinage should be left to the ordinary competition of manufacturers and traders; but when this has occurred the currency has uniformly become debased, and it is generally held, in accordance with the maxims of civil and constitutional law, that the right of coining is a prerogative of the state. Even in the case of state issues base money has been circulated, as in England in the reigns of Henry VIII and Edward VI, but the attempt is little likely to be repeated, the last of such debased issues, with the refusal to redeem it at its nominal value, having been made by a petty German prince early in the last century. In the matter of state supervision two precautions are particularly necessary; that the standard coins shall be issued as nearly as possible of the standard weight, and that all coin worn below the least legal weight shall be withdrawn from circulation. The ground for these precautions is to be found in the broad general principle relating to the circulation of money, and known as Gresham's Law, that bad money invariably drives good money out of circulation, the heaviest coins being selected for exporting, hoarding, melting, conversion into jewelry, gold-leaf, etc. The law holds good not only with regard to coins in one kind of metal, but to all kinds of money in the same circulation, the relatively cheaper medium of exchange being retained in circulation while the other disappears. Of the various systems of metallic currency, the first adopted was that known as the single-legal-tender system, in which the state issued certified coins in one metal only. It was found, however, that in such cases the people invariably circulated for convenience coins of other metals, and there naturally arose out of this the adoption of a double or multiple legal tender system, in which coins were issued in different metals at a fixed rate of exchange. To obviate difficulties arising from the possession of two or more metals as concurrent standards of value, with the constant tendency of one or other to become more valuable as metal than as currency, a third system, the composite-legal-tender, came into existence, in which coins of one metal were adopted as the standard of value, and token coins only issued in the other metals for the payment of small amounts. The last system is that now prevalent in Great Britain; but the double-legal-tender system, to which the French have long adhered, and which long existed in the United States, has found an increasing number of advocates for its universal adoption. It was abandoned in the United States in 1900 in favor of gold as the single standard of value. See *Bimetallism*.

The circulation of representative money differs from that of standard metallic money in that it circulates only within the district or country where it is legally or habitually current. In the payment of debts to foreign merchants the only money which can be exported is standard metallic money. Hence Gresham's law holds with regard to paper money, which is, like light and debased coins, capable of driving out standard money. Examples of this are to be found in the suspension of specie payments by the Bank of England between 1797 and 1819, in the history of the French assignats at the time of the revolution, and in the financial history of the American Civil war. The various methods on which the issue of paper money may be conducted are exceedingly numerous and a matter of interminable debate. The state may either constitute itself the sole issuer of representative money on the same lines as it constitutes itself sole issuer of metallic money, or it may allow corporations, companies, or private individuals to issue representative money under legislative control.

The question as to the duty of a government in this respect has been much obscured by the want of a clear apprehension of the distinction between a real and a nominal currency. The doctrine of orthodox English writers on the currency of the absolute convertibility of the bank-note, by which is intended a convertibility provided for by the action of government, is held by some writers to proceed on an altogether exaggerated and inaccurate notion of the functions of a government. Another idea, that the issue of paper money ought to be wholly controlled by government, or ought to rest entirely upon government credit, places a high degree of faith in the trustworthiness of governments, and is held by many to misconceive the nature and objects of a paper currency. See also *Bank* and *Money*.

Current-meter (kŭr'ĕnt-mē'tĕr), CURRENT GAUGE, an instrument for measuring the velocity of currents. It may be constructed in various ways, *e.g.*, a simple tube which is bent and has its lower end open to the current, the ascension of water in the vertical part indicating the velocity of the current.

Currents (kur'ents), MARINE, masses of sea-water flowing or moving forward in the manner of a great stream. They are phenomena of the highest importance, both on account of their influence upon the climate of many maritime regions—an influence often reaching far inland—and their practical relation to the art of navigation. These currents are numerous, and taken together constitute an oceanic circulation the intricacy and irregularity of whose form is due to the number and variety of the agencies at work. Among the theories which have been put forward to account for the existence of currents the chief place belongs to the theory of a circuit maintained between equatorial and polar waters. According to this theory there is in either hemisphere an area within which the waters of the ocean are colder, and hence by many degrees denser, than within the belt of the tropics. The natural result is a tendency of the colder and heavier water to sink and to diffuse itself over the lower portion of the ocean-bed, and a movement of the warmer and lighter water in the direction of the surface, over which it tends to become diffused. In other words, the colder waters will move beneath the surface in the direction of the equator, and the warmer waters will flow along the surface in the direction of either pole. Hence, in either half of the globe there are two great and opposite currents—a *cold* current flowing from the pole towards the equator, and a *warm* current flowing from the equator in the direction of the pole. This theory has been excellently illustrated by Dr. Carpenter's experiment, in which a trough of glass filled with water and having a lump of ice at one end and a heated bar of iron at the other exhibits a similar circulation of hot and cold currents. To this theory Sir C. Wyville Thompson opposed a theory of evaporation as the general cause of the movement, holding that in the Antarctic Ocean at least the return of moisture to the south to balance the cold indraught of water that comes from thence takes place in a large measure through the atmosphere. Another great general cause of currents is to be found in the axial rotation of the earth eastward, by which the movement of tropical water towards the pole is deflected eastward, and becomes in the northern hemisphere a northeastwardly current and in the southern a southeastwardly one. Under the operation of the same laws the opposite currents from polar latitudes to the equator are deflected in southwesterly and northwesterly directions, respectively. It is to such influences that we may, in the main, attribute the well-known differences between the climates of North America and Europe within correspondent parallels. Other causes, more local in their nature, must be looked for to explain the origin and direction of currents in particular cases. In the case of surface or drift currents, for instance, it is probable that these are largely caused by the action of winds. Thus it is to the constant drift of surface water to the westward under the influence of the trade-wind that the equatorial currents of the Atlantic and Pacific are due. In the case of the Atlantic Ocean the westward-moving waters, encountering the eastward extension of the South American mainland, become of necessity divided into two streams, the one of which sets to the southward along the eastern coast of Brazil, while the other advances along the more northwardly portions of the South American continent, past the outlets of the Amazon and the Orinoco, and thence into the Caribbean Sea. From the latter land-enclosed basin its course is necessarily into the similarly shut-in basin of the Mexican Gulf, whence it finally emerges through the narrow channel of Florida as the well-known gulf stream (which see). In the case of the Pacific Ocean there exists no such unbroken land barrier to the westwardly progress of the equatorial waters. A portion of its equatorial stream, however, is deflected to the northward towards the coasts of Japan (where it forms the well-known Japan stream, setting to the northeastward, past the Kuriles, in the direction of the Aleutian Islands), while another portion turns southwardly in the direction of Australia and New Zealand. To the same action of the winds, operating in connection with the obstacles presented by the land, divergent and counter-currents are due. Thus in the Atlantic and the Pacific there flows between the two equatorial trade-wind currents a counter-current in exactly the opposite direction, and there is a similar counter-current in the Indian Ocean north of its sole trade-wind current. Currents called *indraught currents* are also caused by the flow of water to replace that taken away by currents due to causes already mentioned. An example of this is found on the west coast of Africa, where an indraught current replaces the water blown towards the coast of South America. In the case of inland seas evaporation deter-

mines the direction of the surface currents, the direction being inwards, where, as in the Mediterranean, the evaporation exceeds the inflow of fresh water; and outwards, as in the Baltic and the Black Sea, where there is an opposite state of matters.

Curriculum (ku-rik'ū-lum), originally, in Latin, the course over which the race was run, hence the whole course of study at a university necessary to qualify for a particular degree.

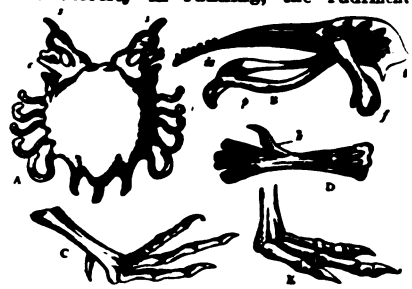
Currie (kur'i), Sir Arthur William, a Canadian soldier and educator, born in 1875. During the European war he commanded the 1st Canadian Division from 1914 to 1917. In the latter year he became commander-in-chief of the Canadian Corps in France. He was made a Knight Grand Cross of St. Michael and St. George; other honors included the French and Belgian Croix de Guerre and the American Distinguished Service Medal. He was appointed principal of McGill University in 1920.

Currie, James (1756-1805), a Scottish physician and the earliest editor of Burns, born in Dumfriesshire. He visited America in 1771, lived in Virginia for five years and at the outbreak of the war returned home. He studied medicine and won renown as a doctor. Edited first edition of Burns in 1800.

Curry (kur'i), an Eastern condiment, a powder composed of cayenne pepper, coriander, ginger, turmeric, and other strong spices.

Currying (kur'i-ing) is the art of dressing cowhides, calfskins, sealskins, etc., principally for shoes, saddlery, or harness, after they have come from the tanner. In dressing leather for shoes the leather is first soaked in water until it is thoroughly wet; then the flesh side is shaved to a proper surface with a knife of peculiar construction, rectangular in form with two handles and a double edge. The leather is then thrown into the water again, scoured upon a stone till the white substance called *bloom* is forced out, then rubbed with a greasy substance and hung up to dry. When thoroughly dry it is *grained* with a toothed instrument on the flesh side and *brained* on the grain or hair side for the purpose of softening the leather. A further process of *paring* and *graining* makes it *ready for waxing* or *coloring*, in which oil and lampblack are used on the flesh side. It is then sized, dried and tallowed. In the process the leather is made smooth, lustrous, supple and waterproof.

Cursores (kur-sō'rez), or Runners, an order of birds, which includes the ostrich, rhea, emeu, cassowary and apteryx. The birds of this order are distinguished by their remarkable velocity in running, the rudimentary character of their wings, which are too short to be of use for flight, and by the length and strength of their legs. The breast-bone is destitute of the ridge or keel which it possesses in most birds, hence the name *Ratitæ*. (L. *ratis*, a raft).



Morphology of Cursores.
A, Sternum of the Ostrich (*Struthio camelus*): *s*, Scapula; *c*, Coracoid. B, Side View of the Pelvis of the Ostrich: *i*, Ilium; *p*, Pubis; *is*, Ischium; *f*, Femur. C, Foot of *Apteryx Australis*. D, Tarso-metatarsus of the *Apteryx*, showing the hallux placed high up on its posterior surface. E, Foot of the *Rhea Americana*.

Curtis (kur'tis), George William, author, born at Providence, Rhode Island, in 1824; died in 1892. In 1851 he published a popular work, *Nile Notes of a Howadji*, and in 1852 *The Howadji in Syria*. Later works were *Lotus Eating*, *The Potiphar Papers*, *Prue and I* and *Trumps*. He became popular as an orator. In 1850 he connected himself with the New York *Tribune;* in 1853 with *Harper's Monthly*. In 1857 he became the editor of *Harper's Weekly*, and of *Harper's Bazar* in 1867. He was an earnest advocate of civil service reform.

Curtius (kurt'se-us), Ernst, a German Hellenist, born in 1814; visited Athens and the Peloponnesus in 1837 to make antiquarian researches; returned to his native country in 1840; appointed tutor to Prince Frederick William; succeeded Hermann as professor at Göttingen in 1856. Of his works, which all relate to Greek antiquities, the best known is the *History of Greece*, which has been published in English. Died in 1896.

Curtius, Georg, brother of the preceding, a distinguished phil-

Photo from Western Newspaper Union

SIR ARTHUR WILLIAM CURRIE

Commander of the Canadian forces on the Western Front in the Great War. He was appointed Principal of McGill University in 1920.

ologist, notable for his application of the comparative method to the study of the Greek and Latin languages. He was born at Lübeck in 1820, and in 1862 became professor of classical philology at Leipzig. He died in 1885. Of his works, a *Greek Grammar*, *Principles of Greek Etymology* and *The Greek Verb* have been translated into English.

Curtius (kur'she-us), METTUS or MARCUS, a noble Roman youth, who, according to the legend, plunged with horse and armor into a chasm which had opened in the forum (B.C. 362), thus devoting himself to death for the good of his country, a soothsayer having declared that the dangerous chasm would only close if what was most precious to Rome were thrown into it.

Curtius Rufus, QUINTUS, a Roman writer, author of a *History of Alexander the Great*, in ten books, the first two of which are lost. His style is florid, and his narratives have more of romance than of historical certainty. Nothing certain is known of his life.

Curule Magistrates (ku'rūl), in ancient Rome, the highest dignitaries of the state, distinguished from all others by enjoying the privilege of sitting on ivory chairs (*sellæ curūles*) when engaged in their public functions. The curule magistrates were the consuls, prætors, censors and chief ædiles, who, to distinguish them from the plebeian ædiles, were called *curule*.

Curve (kurv; Latin, *curvus*, crooked), a line which may be cut by a straight line in more points than one; a line in which no three consecutive points lie in the same direction. The doctrine of curves and of the figures and solids generated from them constitutes what is called the higher geometry, and forms one of the most interesting and important branches of mathematical science. Curve lines are distinguished into algebraical or geometrical and transcendental or mechanical. The varieties of curves are innumerable; that is, they have different degrees of bending or curvature. The curves most generally referred to, besides the circle, are the ellipse, the parabola and the hyperbola, to which may be added the cycloid.

Curwen (kur'wen), JOHN, an English musician, the chief promoter of the tonic sol-fa method of teaching to sing, was born November 14, 1816. He became a minister of the Independent Church, and became acquainted with Miss Glover's sol-fa system while visiting that lady's school at Norwich. After that he devoted much of his time to bringing the new method before the public by lectures, publications, and the establishment of a tonic sol-fa association and college. He died May 26, 1880.

Curzola (kur'dzō-la), the most beautiful of the Dalmatian Islands, in the Adriatic, stretching W. to E. about 25 miles, with an average breadth of 4 miles; area, 85 square miles. It is covered in many places with magnificent timber. The fisheries are very productive. Pop. 20,000.

Curzon (kur'zon), OF KEDLESTON, GEORGE NATHANIEL, EARL (1859-), a British statesman, born at Kedleston, Derbyshire. He was viceroy of India 1899-1905; member of imperial war cabinet 1916. He wrote *Problems of the Far East*, *University Reform*, *War Poems and Other Translations*, *Subjects of the Day*, etc.

Cushing (kush'ing), a city of Payne Co., Oklahoma, 53 miles N. E. of Oklahoma, in an oil, cotton and gas district, with refineries, gins, compress, etc. Pop. (1920) 6326.

Cushing (kush'ing), CALEB, statesman and diplomatist, was born at Salisbury, Massachusetts, in 1800; died in 1879. He studied law and was admitted to the bar in 1823, visiting Europe soon after and publishing *Reminiscences of Spain*, and *Historical and Political Review of the Revolution in France*. He served in Congress 1835-43; was appointed secretary of the treasury in 1843, but not confirmed by the Senate; in 1844 negotiated the first treaty of the United States with China, and in 1847 took part in the Mexican war, rising in rank to brigadier-general. In 1852 he was made a justice of the Supreme Court of Massachusetts; was Attorney-General of the United States 1853-57; in 1872 was United States counsel at Geneva in the Alabama Claims arbitration; in 1873 was minister to Spain, and in 1874 was nominated by President Grant Chief Justice of the United States Supreme Court, but was not confirmed.

Cushing, FRANK HAMILTON, ethnologist, was born at Northeast, Pennsylvania, in 1857. In 1875 he was engaged by Professor Baird to make collections of Indian relics for the National Museum, and in 1879 accompanied Major Powell's expedition to New Mexico, and here for six years dwelt in a village of the Zuñi Indians, learning their language and traditions and gaining initiation into their secret religious ceremonies. His researches among the ancient ruins in this region were of great importance. In 1895 he discovered re-

their style than for profound knowledge and elevated speculation, were attended by all the accomplished society of Paris. In January, 1800, he was appointed to the Collège de France. Under Napoleon, who fully recognized his merits, Cuvier held important offices in the department of public instruction. In 1819 he was received among the forty members of the French Academy. He died at Paris in 1832. Among the numerous works by which he greatly extended the study of natural history we may mention *Recherches sur les Ossemens Fossiles; Discour sur les Révolutions de la Surface de la Globe; Leçons d'Anatomie Comparée; Histoire Naturelle des Poissons; Le Règne Animal*, the last a general view of the animal kingdom, in which all animals were divided into the four great classes; Vertebrata, Mollusca, Articulata and Radiata.—His brother FRÉDÉRIC (1773-1838) was also a naturalist of no mean order.

Cuxhaven (kuks'hä'fen), a German seaport, bathing place and pilot station in Hamburg territory on the North Sea at the mouth of the Elbe. There is a good harbor. Pop. 14,888.

Cuyabá (kö-yá-bä'), a city of Matto Grosso, Brazil, on Cuyabá River. Pop. 17,815.

Cuyahoga Falls (kī'a-hō'ga), a village of Summit Co., Ohio, 5 miles N. E. of Akron, on the Cuyahoga River. It has manufactures of iron and rubber goods, paper bags, flour. Pop. (1910) 4020; (1920) 10,200.

Cuyp (koip), ALBERT. See KUYP.

Cuzco (köz'kō), an ancient city in Peru, capital of a department of the same name, is situated in a wide valley about 11,300 feet above sea-level, between the Apurimac and Urubamba. The houses are built of stone, covered with red tiles, and are many of them of the era of the Incas. The ruins of the fortress built by the Incas, a stupendous specimen of cyclopean architecture, are still to be seen, as well as other massive specimens of ancient Peruvian architecture. The inhabitants manufacture sugar, soap, cotton and woolen goods, etc. There is a university, a cathedral, etc. Cuzco is the most ancient of the Peruvian cities, and was at one time the capital of the empire of the Incas. In 1534 it was taken by Pizarro. Pop. about 30,000. Area of the department, about 156,317 sq. miles; pop. 328,980.

Cyamus (sī'a-mus), a genus of Crustacea, the species of which are parasites on the whale. They are called *Whale-lice*.

Cyanic Series (sī-an'ik), in botany, a series of colors in flowers of which blue is the type, passing into red or white, but never into yellow. It is distinguished from the *xanthic* series, of which the type is yellow, passing into red and white, but never into blue.

Cyanide (sī'a-nīd), a combination of cyanogen with a metallic base.

Cyanin (sī'a-nin), the blue coloring matter of certain flowers, as of the violet, cornflower, etc. It is extracted from the petals by alcohol.

Cyanite, or KYANITE (sī'a-nīt, kī'a-nīt), a mineral of the garnet family found both massive and in regular crystals. Its prevailing color is blue, but of varying shades. It is found only in primitive rocks.

Cyanogen (sī-an'o-jen), a compound radical composed of one atom of carbon and one of nitrogen; symbol, CN (or Cy). It is a gas of a strong and peculiar odor, resembling that of crushed peach leaves, and burning with a rich, purple flame. It is irrespirable and highly poisonous. It unites with oxygen, hydrogen, and most non-metallic elements, and also with the metals, forming cyanides. Combined with hydrogen it forms prussic (hydrocyanic) acid. See *Prussic Acid*.

Cyanometer (sī-a-nom'e-tėr; 'measurer of blue') is the name of an instrument invented by Saussure for ascertaining the intensity of color in the sky. It consists of a circular piece of metal or pasteboard, with a band divided by radii into fifty-one portions, each of which is painted with a shade of blue, beginning with the deepest, not distinguishable from black, and decreasing gradually to the lightest, not distinguishable from white. The observer holds this up between himself and the sky, turning it gradually round till he find the tint of the instrument exactly corresponding to the tint of the sky.

Cyanosis (sī-a-nō'sis), a condition in which, from lack of proper aëration, the blood is blue instead of red; hence called the blue disease; the blue jaundice of the ancients. It is sometimes due to malformation of the heart, whereby the venous and arterial currents mingle.

Cyanotype Process (sī-an'ō-tīp), a photographic picture obtained by the use of a cyanide. This process is in very common use by architects and engineers for copying plans, producing an image with white lines upon a blue ground. Sensitive paper is made by brushing it over with a solution of ferric oxalate (10 gr. to the

Cutcherry (kuch'e-ri), in the East Indies, a court of justice or public office.

Cutch Gundava (gun-da'va), a division of Beluchistan, in the northeast; area, 10,000 sq. miles; pop. 100,000.

Cuthbert (k u th'b e r t), ST., a celebrated leader in the early English Church, was born, according to the tradition, near Melrose about 635. He became a monk, and in 664 was appointed prior of Melrose, which after some years he quitted to take a similar charge in the monastery of Lindisfarne. Still seeking a more ascetic life, Cuthbert then retired to the desolate isle of Farne. Here the fame of his holiness attracted many great visitors, and he was at last persuaded to accept the bishopric of Hexham, which he, however, resigned two years after, again retiring to his hermitage in the island of Farne, where he died in 687. The anniversary of his death was a great festival in the English Church.

Cuticle (kū'ti-kl), the epidermis or outermost layer of the skin, a thin, pellucid, insensible membrane that covers and defends the true skin.

Cutis (kū'tis), in anatomy, a dense resisting membrane of a flexible and extensible nature, which forms the general envelope of the body; it is next below the cuticle, and is often called the true skin.

Cutlass (kut'las), a short sword used by seamen. A guard over the hand is an advantage. It is, if well understood, a very effectual weapon in close contact; on account of its shortness it can be handled easily, and yet is long enough to protect a skilful swordsman.

Cutlery (kut'ler-i), is a term applied to all cutting instruments made of steel. The finer articles, such as the best scissors, penknives, razors and lancets are made of cast-steel. Table-knives, plane-irons, and chisels of a very superior kind are made of shear-steel, while common steel is wrought up into ordinary cutlery. One of the commonest articles of cutlery, a razor, is made as follows:—The workman, being furnished with a bar of cast-steel, forges his blade from it. After being brought into true shape by filing, the blade is exposed to a cherry-red heat and instantly quenched in cold water. The blade is then tempered by first brightening one side and then heating it over a fire free from flame and smoke, until the bright surface acquires a straw color (or it may be tempered differently). It is again quenched, and is then ready for being ground and polished.

Cuttack (kut'tak), a town of Hindustan, in Orissa, on the right bank of the Mahanuddy, 60 miles from its embouchure and 230 s. s. w. Calcutta It has little trade, and is known mainly for its beautiful filigree work in gold and silver. Pop. 51,364. The district of Cuttack has an area of 3654 sq. miles. It is well watered, and rice, pulse, sugar, spices, dyestuffs, etc., are grown along the coast, which is low and marshy, and wheat and maize in the hill regions. On the coast salt is extensively manufactured. Pop. 2,062,758.

Cutter (kut'ėr), a small vessel, furnished with one mast, and a straight running bowsprit which may be run in upon deck. It differs from the sloop in having no stay to support its jib.

Cuttle-bone (kut'l), the dorsal plate of *Sepia officinalis*, formerly much used in medicine as an absorbent, but now used for polishing wood, painting, varnishing, etc., as also for pounce and tooth-powder, and for canary-birds on which to sharpen their beaks.

Cuttle-fish. See *Cephalopoda*, *Squid* and *Sepia*.

Cutty-stool (kut'i), a low stool, the stool of repentance, a seat formerly set apart in Presbyterian churches in Scotland, on which offenders against chastity were exhibited before the congregation and submitted to the minister's rebukes before they were readmitted to church privileges.

Cutwater, the sharp part of the bow of a ship, so called because it cuts or divides the water.

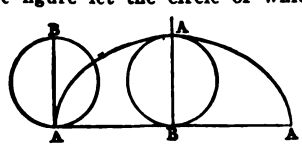
Cutworm, any worm or grub which is destructive to cultivated plants, as cabbage, corn, beans, etc.

Cuvier (kūv-yā), GEORGES LÉOPOLD CHRÉTIEN FRÉDÉRIC DAGOBERT, BARON, a distinguished modern naturalist, was born in August, 1769, at Montbéliard, then belonging to the duchy of Würtemberg. After studying at Stuttgart he became a private tutor in the family of Count d'Héricy, in Normandy, where he was at liberty to devote his leisure to natural science, and in particular to zoology. A natural classification of the vermes or worms was his first labor. The ability and knowledge shown in this work procured him the friendship of the greatest naturalists of France. He was invited to Paris, established at a central school there, and was received by the Institute as a member of the first class. His lectures on natural history, distinguished not less for the elegance of

be done by a skilled cyclist is the journey of 12,000 miles performed by Mr. Thomas Stevens across the continents of America, Europe and Asia on a bicycle. Commencing in April, 1884, he crossed first America, then Europe, then Asia, finishing at Yokohama in Japan in December of the same year. Motor cycles, moved by gasoline engines, have come into common use. The bicycle and the motor-cycle are employed in military and police service. See *Bicycle* and *Tricycle*.

Cyclobranchiata (sī'klō-brang-ki-ā'-ta), an order of gasteropods in which the branchiæ or organs of respiration form a fringe around the body of the animal, between the edge of the body and the foot. The order consists principally of the limpets.

Cycloid (sī'kloid; Gr. *cyclos*, circle), a curve generated by a point in the plane of a circle when the circle is rolled along a straight line and kept always in the same plane. The genesis of the common cycloid may be conceived by imagining a nail in the circumference of a carriage-wheel; the curves which the nail describes while the wheel runs forward are cycloids. The cycloid is the curve of swiftest descent; that is, a heavy body descending by the force of its own gravity will move from one point of this curve to any other point in less time than it will take to move in any other curve which can be drawn between these points. Also, a body falls through any arc of an inverted cycloid in the same time whether the arc be great or small. In the figure let the circle of which the



diameter is AB make one revolution upon the straight line ABA, equal in length to its circumference, then the curved line AAA, traced out by that point of the circle which was in contact with the point A in the straight line when the circle began to revolve is called a cycloid. The length of the cycloid is four times the diameter of the generating circle, and its area three times the area of this circle. This line is very important in the higher branches of mechanics.

Cyclometer (sī-klom'e-tėr), an apparatus for measuring and recording the distances traversed by wheeled vehicles and bicycles. It is also used in railroading. It is purely automatic, and by an ingenious attachment can be made to record and locate every inequality in the roadbed of a railroad.

Cycloid Fishes, an order of fishes according to the arrangement of Agassiz, having smooth, round, or oval scales, as the salmon and herring. The scales are formed of concentric layers, not covered with enamel and not spinous on the margins; they are generally imbricated, but are sometimes placed side by side without overlapping.

Cyclone (sī'klōn), a circular or rotatory storm or system of winds, varying from 600 to 3000 miles in diameter, revolving round a center, which advances at a rate that may be as high as 40 miles an hour, and towards which the winds tend. Cyclones of greatest violence occur within the tropics, and they revolve in opposite directions in the two hemispheres—in the southern with, and in the northern against, the hands of a watch—in consequence of which, and the progression of the center, the strength of the storm in the northern hemisphere is greater on the south of the line of progression and smaller on the north than it would if the center were stationary, the case being reversed in the southern hemisphere. An *anticyclone* is a storm of opposite character, the general tendency of the winds in it being away from the center, while it also shifts within comparatively small limits. Cyclones are preceded by a singular calm and a great fall of the barometer.

Cyclopædia (sī-klō-pē'di-a), See *Encyclopedia*.

Cyclopean Works (si-klō'pē-an), in ancient architecture, masonry constructed with huge blocks of stone unhewn and uncemented, found in Greece, Sicily, Asia Minor, Peru, etc. A similar style of work is to be found in the British Isles, as the Rock of Cashel in Ireland or the Laws near Broughty-Ferry in Scotland.

Cyclops (sī'klops; Gr. *Kyklōps*, literally round-eyed, pl. *Kyklōpes*; in English the word is used as a singular or a plural), in Greek myths, a fabled race of one-eyed giants, the sons of Urānus and Gē (Heaven and Earth), slain by Apollo. They were often represented as a numerous race living in Sicily and rearing cattle and sheep. Of such is the Cyclops of the *Odyssey*. Later traditions describe them as the servants of Vulcan working under Ætna, and engaged in forging armor and thunderbolts.—*Cyclops* is likewise the generic name of a certain minute Crustacean, order Branchiopoda, having but one eye, situated in the middle of its forehead.

Cyclostomi (sī-klos'tō-mi), CYCLOSTOMATA (sī-klos-tom'a-ta), an order of cartilaginous fishes having circular mouths, as the lamprey. Called also *Marsipobranchia.*

Cyder. See *Cider.*

Cydnus (sid'nus), a river in Cilicia, rising in the Taurus Mountains, anciently celebrated for the clearness and coolness of its waters.

Cydonia (si-dō'ni-a). See *Quince.*

Cygnus (sig'nus; 'the Swan'), one of Ptolemy's northern constellations. Within this constellation is one of the richest portions of the Milky Way.

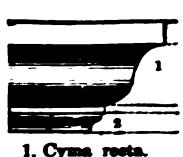
Cylinder (sil'in-dėr), a geometrical solid which, in popular languages, may be described as a long, round, solid body, terminating in two flat, circular surfaces which are equal and parallel. There is a distinction between *right* cylinders and *oblique* cylinders. In the first case, the axis—that is, the straight line joining the center of the two opposite bases—must be perpendicular, and it may be regarded as described by the revolution of a rectangular parallelogram round one of its longer sides (the axis); in the second, the axis must form an angle with the inferior base.—In steam engines, the cylinder is the chamber in which the force of the steam is exerted on the piston.

Cylindrical Lens (sil-in'drik-al), a lens whose surfaces are cylindrical, instead of spherical, which is usually the case. A convex cylindrical lens brings the image of a source of light to a focus in a line instead of in a point. They are usually *plano-cylindrical;* that is, cylindrical on one side and flat on the other.

Cylindrical Vaulting, in architecture, the most ancient mode of vaulting, called also a wagon, barrel or tunnel roof. It is a plain half-cylinder without either groins or ribs.

Cyllene (sil-lē'nē), a mountain of Southern Greece, 7789 feet high.

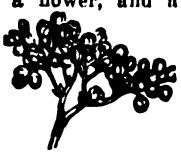
Cyma (sī'ma), in architecture, a wavy molding the profile of which is made up of a curve of contrary flexure, either concave at top and convex at bottom or the reverse. In the first case it is called a *cyma recta;* in the second a *cyma reversa.* It is a member of the cornice, standing below the abacus or corona.



1, Cyma recta. 2, Cymareversa.

Cymbals (sim'bals), musical instruments consisting of two basins of brass with a plane periphery, which emit a ringing sound when struck together. They are military instruments, but are now frequently used in orchestras.

Cyme (sīm), in botany, a mode of inflorescence in which the principal axis terminates in a flower, and a number of secondary axes rise from the primary, each of these terminating in a flower, while from these secondary axes others may arise terminating in the same way, and so on, giving a flat-topped or rounded mass. Examples may be found in the common elder and the Caryophyllaceæ.


Cyme.

Cymri (kim'ri), a branch of the Celtic family of nations which appears to have succeeded the Gaels in the great migration of the Celts westwards, and to have driven the Gaelic branch to the west (into Ireland and the Isle of Man) and to the north (into the Highlands of Scotland), while they themselves occupied the southern parts of Britain. At a later period they were themselves driven out of the Lowlands of Britain by the invasions of the Angles, Saxons and Jutes, and compelled to take refuge in the mountainous regions of Wales, Cornwall and the northwest of England. Wales may now be regarded as the chief seat of the Cymri.

Cynanche (sin-ang'kē), a name given to several diseases of the throat or windpipe, such as quinsy, croup, etc.

Cynara (kin'a-ra), a genus of Compositæ, in many respects like the thistle. The two best-known species are the artichoke and the cardoon.

Cynewulf (kin'e-wulf), an Anglo-Saxon or early English poet, whose name we only know from its being given in runes in the poems attributed to him, viz. *Elene* ('Helena'), the legend of the discovery of the true cross; *Juliana,* the story of the martyr of that name; and *Crist* ('Christ'), a long poem incomplete at the beginning. The name Cynewulf also occurs as the solution of one of the metrical riddles in the Anglo-Saxon collection. Other poems, the *Andreas,* the *Wanderer,* the *Seafarer,* etc., have been ascribed to him without sufficient grounds. Cynewulf probably lived in the first half of the eighth century.

From his poems we may gather that he spent the earlier part of his life as a wandering minstrel, devoting the later to the composition of the religious poems connected with his name.

Cynics (sin'iks), a sect of philosophers among the ancient Greeks, founded by Antisthenes, a scholar of Socrates, at Athens, about 380 B.C. Their philosophy was a one-sided development of the Socratic teaching by Antisthenes and his followers, who looked only to the severer aspect of their master's doctrines, and valued themselves on their contempt of arts, sciences, riches, and all the social civilization of life. They made virtue to consist in entire self-denial and independence of external circumstances. In time this attitude degenerated into a kind of philosophic savagery and neglect of decency, and the Cynics fell into contempt.

Cynip (sī'nip), the gallfly, a genus of hymenopterous insects remarkable for their extremely minute head and large, elevated thorax. The females are provided with an ovipositor by which they make holes where they deposit their eggs in different parts of plants, thus producing those excrescences which are known as galls. The gall of commerce used in manufacturing ink is caused by the *Cynips gallæ tinctoriæ* piercing a species of oak which grows in the Levant. The *Cynips rosæ*, or bedeguar gallfly, produces the hairy excrescences seen on the rosebush and the sweet-brier. See *Bedeguar*.

Cynocephalus (sī-nō-sef'a-lus), a genus of baboons. See *Baboon*.

Cynoglossum (sī-nō-glos'um), hound's-tongue, a genus of plants, nat. order Boraginaceæ, consisting of herbs from the temperate zones. *C. officināle* and *C. montānum* are British plants. The former has a disagreeable smell like that from mice, and was at one time used as a remedy in scrofula. There are about fifty other species, all coarse plants.

Cynomorium (sī-nō-mō'ri-um), a genus of plants, nat. order Cynomoriaceæ. *C. coccinĕum*, the *fungus melitensis* of the old herbalists, is a small plant which grows in Sicily, Malta and Gozo, and was valued as an astringent and styptic in dysentery and hemorrhage.

Cynosarges (sī-nu-sar'jēz), in ancient Athens, a gymnasium in which Antisthenes, the founder of the Cynics, taught.

Cynoscephalæ (sī-nos-sef'a-le; Greek, 'dogs' heads'), a range of hills in Thessaly, memorable for two battles fought there in ancient times. The first was in B.C. 364, between the Thebans and Alexander of Pheræ, in which Pelopidas was slain; and the second in B.C. 197, in which the last Philip of Macedon was defeated by the Roman consul Flamininus.

Cynosura (sī-nō-sū'ra), CYNOSURE (lit. 'dog's tail'), an old name of the constellation Ursa Minor, or the Lesser Bear, containing the North Star.

Cynosurus, a genus of grasses. See *Dog's-tail Grass*.

Cynthius (sin'thi-us), a surname of Apollo, from Mount Cynthus, island of Delos, on which he was born. For the same reason Diana, his sister, is called Cynthia.

Cyperaceæ (sī-pēr-ā'se-ē), the sedges, a natural order of monocotyledonous plants including fully 2000 known species. The members of this order are grassy or rush-like plants, generally growing in moist places on the margins of lakes and streams. Their stem is a cylindrical or triangular culm with or without knots; the leaves are sheathing. They are of little or no economical use, with the exception of *Cypĕrus papyrus*, which furnished the papyrus of Egypt.

Cyperus (sip'er-us), a genus of plants, type of the order Cyperaceæ. They are herbs with compressed spikelets of many flowers, found in cold climates, and characterized by the possession of bisexual flowers. Several kinds are cultivated in cool houses for decorative purposes; but it is essential that water be freely supplied as the species are mostly natives of swampy districts. *C. alternifolius*, the umbrella palm, is useful in aquaria.

Cypress (sī'pres), a genus of coniferous trees. The *Cupressus sempervīrens*, or common European cypress, is a dark-colored evergreen with extremely small leaves, entirely covering the branches. It has a quadrangular or, where the top branches diminish in length, pyramidal shape. Cypress-trees, though of a somewhat somber and gloomy appearance, may be used with great effect in shrubberies and gardens. They are much valued also on account of their wood, which is hard, compact, and very durable, of a reddish color and a pleasant smell. It was used at funerals and as an emblem of mourning by the ancients. Among other members of the genus are the Indian cypress (*C. glauca*); the *C. pendŭla*, a native of China and Japan; and the *C. thurifĕra*, or incense-bearing cypress, a native of Mexico; the ever-

green American cypress or White Cedar (*C. thyoides*), etc. The *Taxodium distichum*, or deciduous cypress of the United States and Mexico, is frequently

Cypress (*Cupressus sempervirens*, var. *fastigiata*).

called the Virginian cypress. Its timber is valuable, and under water is almost imperishable. In parts of the United States this cypress constitutes forests hundreds of miles in extent.

Cyprian (sip'ri-an), St., a father of the African Church, born at Carthage about the beginning of the third century, was a teacher of rhetoric there. About 246 he was converted to Christianity, when he distributed his property among the poor, and began to live in the greatest abstinence. The church in Carthage soon chose him presbyter, and in 248 he was made bishop. During the persecutions under Decius and Valerian he had twice to leave Carthage, but continued by his extensive correspondence to govern the African Church. He was beheaded in 258, for having preached the gospel in his gardens at Carthage. Among his writings are eighty-one *Epistolæ* or official letters, besides several works on doctrine.

Cyprinidæ (si-prin'i-dē), the carps, a family of soft-finned, abdominal fishes, characterized by a small mouth, feeble jaws, gill-rays few in number; body covered with scales; and no dorsal adipose fin, such as is possessed by the silures and the salmon. The members are the least carnivorous of fishes. They include the carps, barels, tenches, breams, loaches, etc. The type genus is *Cyprinus*.

Cyprinodontidæ (si - prin - o-don'ti-dē), a family of malacopterygious fishes, allied to the Cyprinidæ, or carps.

Cyprinus (si-prī'nus), the carp genus of fishes, type of the family Cyprinidæ (which see).

Cypripendium (si - pri - pē' di-um), lady's slipper, a genus of plants of the nat. order Orchidaceæ. Three species are natives of the United States. *C. arietinum*, the ram's-head, is found from Canada to Vermont. One species (*C. calceŏlus*) is a native of Britain.

Cypris (sip'ris), a genus of minute fresh-water crustaceans popularly known as waterfleas. They have the body enclosed in a delicate shell and swim by means of cilia. The Cypris is common in stagnant pools, and is very often found in a fossil state.

Cyprus (sī'prus), an island lying to the south of Asia Minor, and the most easterly in the Mediterranean. Its greatest length is 145 miles, maximum breadth about 60 miles; area, 3584 sq. miles. The chief features of its surface are two mountain ranges, both stretching east and west, the one running close to the northern shore, and extending through the long northeastern horn or prolongation of the island, the other and more massive (Mount Olympus) occupying a great part of the south of the island, and rising in Troödos to 6590 feet. Between them is the bare and mostly uncultivated plain called Messaria. There is a deficiency of water. The climate is in general healthy. The forests are now under government supervision, and the island is esteemed one of the richest and most fertile in the Levant. Agriculture is the principal industry. Locusts formerly caused considerable damage to crops, but are now nearly extinct. Wheat, barley, cotton, tobacco, olives, raisins and carobs are the most important vegetable products. The wine is famous. Silkworms are reared, and a coarse kind of silk is woven. Salt in large quantities is produced. The minerals are valuable; the copper mines (the name *copper* is derived from that of this island), were anciently a source of great wealth. A recent attempt to work them has met with failure. Large numbers of sheep and goats are reared on the extensive pasture lands of the island. The principal towns are Lefkosia or Nicosia, the capital, the only considerable inland town, and the seaports Larnaca and Limassol. The chief exports are carobs, wine and cotton, with cheese, raisins, cocoons, wool, etc.

After belonging successively to the Phœnicians, Greeks, Egypt, Persia and

again Egypt, Cyprus in 57 B.C. became a Roman province, and passed as such to the eastern division of the empire. In 1191 it was bestowed by Richard of England (who had conquered it when engaged in the third crusade) on Guy de Lusignan, and after his line was extinct it fell into the hands of the Venetians (1489), with whom it remained till it was conquered by the Turks in 1571 and annexed to the Ottoman Empire. In 1878 it was placed under the control of Great Britain by a treaty which recognized the sovereignty of the Sultan and granted to Turkey a specified subsidy, which, however, was not paid directly but retained as an offset against British claims on the Ottoman Empire. During the European war Cyprus was formally annexed by Britain (1914).

Cyprus has become very prosperous during recent years. Modern roads, harbor works and schools have been built, and irrigation schemes have aided in the development of agricultural industry. The local council consists of a commissioner and a legislative council of 18 members. The total exports for 1914 amounted to $2,500,000; imports, $3,300,000. Pop. (1911), estimated, 275,000, of whom more than three-fourths belong to the Cypriote branch of the Greek Orthodox Church.

Cypselus (sip'se-lus), a genus of birds, type of the family Cypselidæ, including the swifts and their congeners. One peculiarity in this family is that the hind toe is turned forward along with the three anterior toes.

Cyr (sēr), St., a French village in the department of the Seine-and-Oise, 1 league west of Versailles; famous for the seminary for the education of ladies of rank which Louis XIV founded here. During the revolution this institution was done away with, and the fine buildings finally converted into a military school by Napoleon (1803). Pop. of the commune, 4253.

Cyrenaica (si-re-nā'i-ka), once a powerful Greek state in the north of Africa (corresponding partly with the modern Barca), west of Egypt, comprising five cities (Pentapolis), among which was Cyrene, a Spartan colony founded in 631 B.C. In later times it came into the hands of the Ptolemies, and in B.C. 95 the Romans obtained it. The Arab invasion ruined it (647). Cyrenaica is at present a vast but as yet very imperfectly explored field of antiquities.

Cyrenaics (si-re-nā'iks), a philosophical sect founded about 380 B.C. by Aristippus, a native of Cyrene and a pupil of Socrates. See *Aristippus.*

Cyrene (si-rē'nē), in ancient times a celebrated city in Africa, about 10 miles from the north coast, founded by Battus and a body of Dorian colonists, B.C. 631. Numerous interesting remains have been discovered here. The town now occupying the site of the ancient Cyrene is a miserable place in the vilayet of Barca. See *Cyrenaica.*

Cyril (sir'il), the name of three saints or fathers of the Christian church. 1. Cyril of Jerusalem, born there about the year 315 A.D., was ordained presbyter in 345, and in 350 or 351 became Patriarch of Jerusalem. He engaged in a warm controversy with Acacius, the Arian Bishop of Cæsarea, by whose artifices he was more than once deposed from his episcopal dignity. He died in 386 or 388. We have some writings composed by him.

2. Cyril of Alexandria was educated by his uncle Theophilus, Patriarch of Alexandria, and in 412 A.D. succeeded him as patriarch. In this position his ambitious spirit brought the Christians into violent quarrels. At the head of the populace he assailed the Jews, destroyed their houses and their furniture, and drove them out of the city. Orestes, the prefect, having complained of such violence, was attacked by 500 furious monks. The assassination of Hypatia, the learned lecturer on geometry and philosophy, took place, it is said, at the instigation of Cyril. His quarrel with Nestorius, and with John, Patriarch of Antioch, regarding the twofold nature of Christ, convulsed the church, and much blood was shed between the rival factions at the Council of Ephesus in 431, the emperor having at last to send troops to disperse them. Cyril closed his restless career in 444.

3. St. Cyril, 'the Apostle of the Slavs,' a native of Thessalonica. He converted the Chazars, a people of Hunnish stock, and the Bulgarians, about A.D. 860. He died about 868. He was the inventor of the *Cyrillian Letters* which took their name from him, and is probably the author of the *Apologies* which bear his name.

Cyrillian Letters (si-ril'i-an), characters used in one of the modes of writing the Slavonic language. In Poland, Bohemia and Lusatia, Roman or German letters are used; but among Russians, Bulgars, and all the Slavonic nations belonging to the Greek Church, the Cyrillic alphabet, a modification of the Greek one, is in use. Besides these there is the Glagolitic alphabet, in which the oldest literature of the Slavonic church is written. See *Glagolitic.*

Cyrus (sī'rus), King of Persia, a celebrated conqueror. The only ancient original authorities for the facts of his life are Herodotus and Ctesias. According to Herodotus, he was the son of Cambyses, a distinguished Persian, and of Mandane, daughter of the Median King Astyages. His grandfather, made apprehensive by a prophecy that his grandson was to dethrone him, gave orders that Cyrus should be destroyed after his birth. But the boy was preserved by the kindness of a herdsman, and at length sent to his parents in Persia. Here Cyrus soon gathered a formidable army, conquered his grandfather (B.C. 559), and thus became king of Media and Persia. In 546 he conquered Crœsus of Lydia, and two years later took Babylon. He also subdued Phœnicia and Palestine, and restored the Jews from their Babylonish captivity. He was slain in battle with a Scythian nation in B.C. 529. Such is the account given by Herodotus; but the narrative of Ctesias differs in not making Cyrus a relative of Astyages and in some other points. The *Cyropædia* of Xenophon, which professes to give an account of the early life of Cyrus, is merely a philosophical romance.

Cyrus, called the YOUNGER, to distinguish him from Cyrus the founder of the Medo-Persian monarchy, was the second son of Darius Nothus or Ochus. Having formed a conspiracy against his elder brother, Artaxerxes Mnemon, Cyrus was condemned to death, but released at the request of his mother, Parysatis, and made governor of Asia Minor. Here he secretly gathered an army, an important part of which consisted of 13,000 Greek auxiliaries, and marched eastwards. His brother with a large army met him in the plains of Cunaxa (B.C. 401), and in the battle which followed, although the troops of Cyrus were victorious, Cyrus himself was slain. The retreat of the Greek auxiliaries of Cyrus from the interior of Persia to the coast of Asia Minor is the subject of Xenophon's *Anabasis*.

Cysticercus (sis-ti-ser'kus), an immature form of tapeworm found in certain animals.

Cystic Worm (sis'tik), an immature or half-developed form of tapeworm, once erroneously supposed to be a distinct species of intestinal worm.

Cystideæ (sis-tid'e-ē), a family of fossil echinoderms, with feebly developed arms, occurring in the Silurian and Carboniferous strata.

Cystitis (sis-tī'tus), inflammation of the bladder.

Cystopteris (sis-top'tėr-us), the bladder-fern, a genus of polypodiaceous, delicate, flaccid ferns.

Cystotomy (sis-tot'ō-mi), in surgery, the operation of cutting into the bladder for the extraction of a calculus or other purpose.

Cythera (si-thē'ra). See *Cerigo*.

Cytisine (sit'i-sin), an alkaloid detected in the ripe seeds of the Laburnum. It is of a nauseous taste, emetic and poisonous.

Cytisus (sit'i-sus), a genus of plants belonging to the nat. order Leguminosæ, suborder Papilionaceæ. The members of the genus are shrubs or small trees, sometimes spiny, with leaves composed of three leaflets, and with yellow, purple or white flowers. They belong to Europe, Asia and North Africa, and are very ornamental plants. The best-known species is the common laburnum (*C. Laburnum;* see *Laburnum*). Another species is the Alpine laburnum (*C. Alpinus*). The common broom (*C. Scoparius*) also belongs to this genus. See *Broom*.

Broom (*Cytisus Scoparius*).

Cyzicus (siz'i-kus), a peninsula of Asia Minor, 60 miles south-west of Constantinople. It was once an island, and the site of an ancient town of the same name.

Czar, or TZAR (zär), an alternative title of Emperor as applied to the rulers of Russia before the revolution (see *Russia*), not improbably a corruption of the Roman title Cæsar. It was first adopted in 1547 by Ivan the Terrible. The wife of the Czar was called Czarina or Czaritza. The heir-apparent and his wife were known as the Czarowitz (Cesarevitch) and the Czarevna (Cesarevna). Imperial princes were grand dukes.

Czartoryski (chär-to-ris'kē), ADAM GEORGE, Prince, a celebrated Polish statesman and patriot, born in 1770. His education was completed at the University of Edinburgh and in London. He fought bravely under Kosciusko, and after the partition of his country in 1795 was sent to St. Petersburg, where he formed a close friendship with Prince Alexander, and was made minister of foreign affairs. In 1805 he resigned his office, and withdrew soon after from public affairs. On the outbreak of the Polish revolution in 1830 he

took an active part and became the head of the national government. After the failure he lived at Paris. He died in 1861.

Czaslau (chäs'lou), a town of Bohemia, 45 miles E. S. E. of Prague. Here Frederick the Great defeated the Austrians (1742). Pop. 10,198.

Czecho-Slovakia (chek'ō-slō-vak'-i-a), a republic of Central Europe, bounded by Germany and Poland in the north and Austria and Hungary in the south. The state was formed at the close of the European war (q. v.) from the former Austrian crownlands of Bohemia and Moravia and parts of Silesia and Hungary. The soil is very productive, the chief crops being rye, oats, barley and flax. Fruit is abundant. The minerals are of great importance, and include iron, coal, lignite and graphite. The history of the country until 1918 will be found under the articles *Bohemia*, *Moravia*, *Silesia*, and *Austria-Hungary*. Area about 45,000 square miles; pop. about 12,000,000.

The Czechs are the most westerly branch of the great Slavonic family of races. They have their headquarters in Bohemia, where they arrived in the fifth century. The origin of the name is unknown. The Czechs speak a Slavonic dialect of great antiquity and of high scientific cultivation. The Czech language is distinguished as highly inflectional, with great facility for forming derivatives, frequentatives, inceptives and diminutives of all kinds. Like the Greek it has a dual number, and its manifold declensions, tenses, and participial formations, with their subtle shades of distinction, give the language a complex grammatical structure. The alphabet consists of 42 letters, expressing a great variety of sounds. In musical value the Czech comes next to Italian.

During the European war (1914-18) the Czecho-Slovaks surrendered in great numbers to the Russians and then fought against their former masters, the Austro-Hungarians. When the Russian armies collapsed the Czecho-Slovaks marched toward Vladivostok, hoping to go from thence to France or Italy and fight again on the Allied side. The Bolshevist troops were sent to disarm them. In the fighting that ensued the Czecho-Slovaks were victorious and seized upon a large section of the Transsiberian railroad. They formed the nucleus of the army of North Russia which fought a long fight against the Bolsheviki.

Recognition of the new state was first made by Italy in April, 1918. A republican form of government was decided upon, under the presidency of Prof. Thomas G. Masaryk. Formal recognition of Czecho-Slovakia was made in the peace treaties with Germany and Austria in 1919.

Czegled (tseg'lād), a market town, Hungary, 39 miles S. E. of Budapest, in a district yielding grain and wine. Pop. 34,000.

Czenstochowa (chen-sto-hō'va), a town in Poland, government of Piotrkow. There is here a convent containing a famous picture of the Virgin, which is visited by vast numbers of pilgrims. Pop. 53,650.

Czernowitz (cher'no-vits), a city of Galicia, on the right bank of the Pruth, 164 miles southeast of Lemberg. It has many imposing buildings. Principal trade is oil, machinery, lumber, beer and toys. During the European war (1914-18) it was the scene of many battles, being captured and evacuated by the Russians several times. It was formerly included in the now dismembered empire of Austria-Hungary. Pop. 87,128.

Czerny (cher'ni), GEORGE, Hospodar of Servia, born in the neighborhood of Belgrade about 1770; beheaded by the Turks, in July, 1817. His true name was George Petrovitch, but he was called *Czerny* or *Kara George*, *i. e.*, Black George. In 1801 he organized an insurrection of his countrymen against the Turks, took Belgrade, and forced the Porte to recognize him as Hospodar of Servia. In 1813, however, he had to retire before a superior force, and took refuge in Austria. Returning to his country in 1817, he was taken and put to death.

Czerny (cher'ni), KARL, pianist and musical composer, born in 1791; died in 1857. Among his pupils were Liszt, Thalberg and other distinguished musicians.

Czirknitz. See *Zirknitz*.

Canada. At the Canadian elections in December, 1921, the Meighen administration and the high-tariff Conservative party went down to defeat, the Liberal party obtaining 121 seats, more than the combined vote of all the other parties. Premier Meighen was defeated in his home constituency. The new premier is William Lyon Mackenzie King, leader of the Liberals. It was the first Parliament in ten years with a majority favoring reciprocity with the United States. The new Progressive party, led by T. A. Crerar, and also favoring reciprocity and low tariff, ranked second. Miss Macphail, Progressive, was elected to Parliament in Ontario. She was the first woman member of the Canadian House of Commons.

Viscount Byng of Vimy took the oath of office as Governor-General of Canada August 11, 1921.

The preliminary census returns give some of the large cities of Canada as follows: Montreal, 607,063; Toronto (assessor's estimate) 512,812; Winnepeg, Man., 178,364; Ottawa, Ont., 107,137; Quebec, Que., 94,058; Calgary, Alta., 63,117; London, Ont., 60,685; Edmonton, Alta., 58,627; Halifax, N. S., 57,674; St. John, N. B., 46,504; Victoria, B. C., 38,775; Windsor, Ont., 38,541. Unofficial estimates of Vancouver, B. C. (with suburbs), 200,000; of Hamilton, Ont., 114,766.

Carman, (William) Bliss, Canadian journalist and poet, born at Fredericton, New Brunswick, Canada, in 1861. He was graduated from the University of New Brunswick in 1881 and also studied at the University of Edinburgh and Harvard University. His poems won for him international fame. He is popularly known as the 'Poet Laureate of Canada.' His publications include: *Low Tide on Grand Pré, Behind the Arras, A Seamark, Ballads of Lost Haven, Songs from Vagabondia* (with Richard Hovey), *More Songs from Vagabondia* (with Richard Hovey), *By the Aurelian Wall, Last Songs from Vagabondia, Christmas Eve at St. Kavin's, Ode for the Coronation, Pipes of Pan, No. I; Pipes of Pan, No. II; Earth Deities, April Airs,* etc.

Caruso, Enrico, world-famous operatic tenor, died at Naples, August 2, 1921.

Charles of Hungary. In 1918 Charles abdicated as emperor of Austria-Hungary and removed to Switzerland on the break up of the dual monarchy. He made two unsuccessful attempts to regain the throne of Hungary in 1921. Fearing that he might make a third attempt, the Allied powers exiled him, with his wife, the ex-empress Zita, to the Spanish island of Madeira.

Child, Richard Washburn, an American author and diplomat, born at Worcester, Mass., in 1881, graduated from Harvard University in 1903. He wrote a number of novels, including *Jim Hands, The Blue Wall, Vanishing Men,* etc. In 1921 he was appointed ambassador to Italy, succeeding Robert Underwood Johnson.

China. The area of the 18 provinces of China proper is estimated at 1,532,420 sq. miles; population, 302,110,000; including Manchuria, Mongolia, Tibet, and dependencies, the area is over 3,900,000 sq. miles, and the population 320,650,000. Peking, the capital, has a population over 1,000,000. Hankow and Shanghai are also credited with over a million population each; Canton being only slightly less. The government is composed of a president (Hsu-Shih-Ch'ang; born, 1853), a vice-president, a senate and house of representatives. The central government is still unable to rule the country completely. Powerful military governors (*Tuchuns*) have established themselves in several provinces and are practically independent of the government of Peking. General Chang Tso-Lin, Tuchun of Manchuria, arrived in Peking December 14, 1921, and is said to have forced the resignation of the Chinese cabinet. Liang Shi-Yi became premier. The reaction of the Canton, South China, government to the new cabinet was hostile. The inspector-general of the Southern provinces of Hunan and Hupeh charged the new cabinet with being pro-Japanese, and civil war was threatened. The United States House of Representatives passed a resolution to prevent the shipment of arms and munitions from the United States. At the Armaments Limitation Conference (q.v.) in Washington, 1921-22, several important treaties affecting China were signed: (1) the general Far-Eastern treaty, binding the nations to respect China's integrity, the open-door policy to be applied in detail, and every opportunity to be given the Chinese people to develop a staple government; (2) the Chinese Tariff treaty, providing international machinery for an immediate revision of Chinese customs duties on a basis of 5 per cent effective, and periodical revisions thereafter, together with changes which will permit imposition of surtaxes; (3) the Shantung treaty, between China and Japan, by which Shantung will be restored to China. Resolutions also agreed

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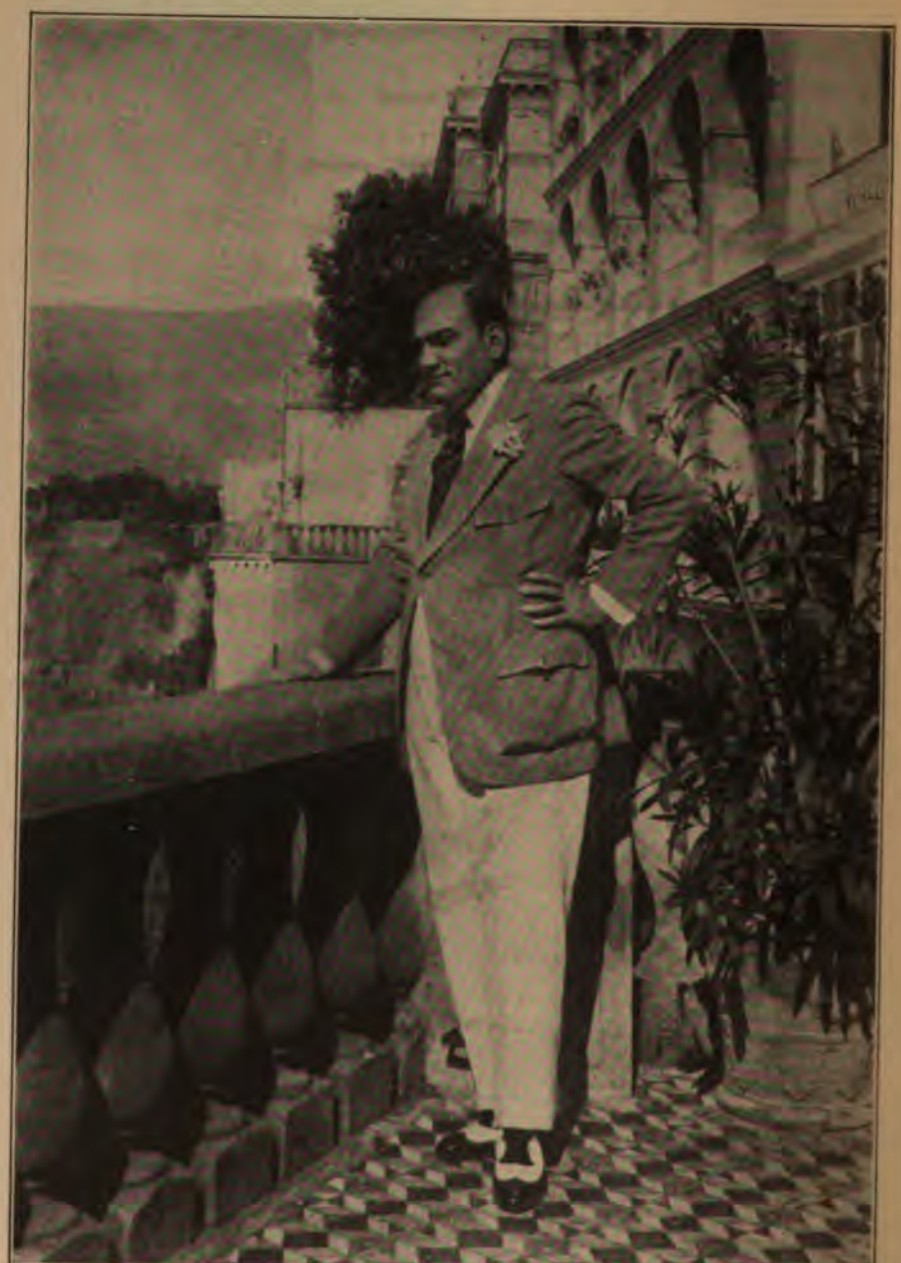

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ENRICO CARUSO (1873-1921)

One of the last pictures taken of the great tenor whose golden voice delighted thousands of opera-goers in America and Europe. In the photograph Caruso is standing on the belvedere of his hotel in Sorrento, gazing across the beautiful bay of Naples, his native city, and the city where he died a few months later. He had been for many years the supreme attraction of the Metropolitan Opera Company of New York.

to provided for the withdrawal of foreign postoffices from China January 1, 1923; establishment of an international commission to investigate the Chinese judicial system with a view to abolition of extra-territorial rights; consultation of diplomats on withdrawal of foreign troops from China; abandonment of the 'twenty-one demands' by Japan; and concessions relating to economic and political conditions in Manchuria and Mongolia. Britain declared her readiness to withdraw from Wei-Hai-Wei. Dr. Wellington Koo was head of the Chinese delegation of the conference.

Clark, CHAMP, American congressman and Speaker of the House, died March 2, 1921.

Clemenceau, GEORGES, French statesman, the great war premier, was awarded the rare distinction of being present at the unveiling of a monument erected at St. Hermine, Vendee, France, in honor of himself and his poilus, in October, 1921.

Colleges. Following is a list of the principal universities and colleges in the United States and Canada.

UNITED STATES

Name	Location	No. of St'd'ts
Adelphi	Brooklyn, N. Y.	571
Agnes Scott	Decatur, Ga.	455
Akron Municipal Univ.	Akron, Ohio	2,690
Alabama, Univ. of	University P. O., Ala.	530
Alabama, Woman's Col. of	Montgomery, Ala.	375
Albany	Albany, Ore.	169
Albion	Albion, Mich.	530
Albright	Myerstown, Pa.	202
Alfred Univ.	Alfred, N. Y.	477
Allegheny	Meadville, Pa.	536
Alma	Alma, Mich.	224
American Univ.	Washington, D. C.	140
Amherst	Amherst, Mass.	503
Antioch	Yellow Springs, Ohio	300
Arizona, Univ. of	Tucson, Ariz.	1,340
Arkansas	Batesville, Ark.	127
Arkansas, Univ. of	Fayetteville, Ark.	1,099
Armour Inst. of Tech.	Chicago, Ill.	2,200
Ashland	Ashland, Ohio	175
Atlanta Univ.	Atlanta, Ga.	561
Atlantic Christian	Wilson, N. C.	181
Augsburg Sem.	Minneapolis, Minn.	147
Austin	Sherman, Tex.	277
Baker Univ.	Baldwin City, Kan.	526
Baldwin-Wallace	Berea, Ohio	1,189
Barnard	New York, N. Y.	748
Barrett Col. & Ind. Inst.	Pee Dee, N. C.	178
Bates	Lewiston, Me.	527
Baylor (Fem.)	Belton, Tex.	1,467
Baylor Univ.	Waco and Dallas, Tex.	2,388
Beaver	Beaver, Pa.	271
Beloit	Beloit, Wis.	638
Benedict	Columbia, S. C.	550
Berea	Berea, Ky.	2,400
Bethany	Lindsborg, Kan.	871
Bethany	Bethany, W. Va.	429
Betael	Russellville, Ky.	161
Bethel	Newton, Kan.	200
Birmingham-South	Birmingham, Ala.	290
Blackburn	Carlinville, Ill.	141
Blue Ridge	New Windsor, Md.	147
Bluffton	Bluffton, Ohio	336
Boston	Boston, Mass.	734
Boston Univ.	Boston, Mass.	8,833
Bowdoin	Brunswick, Me.	403
Bradley Poly. Inst.	Peoria, Ill.	2,014
Brenau	Gainesville, Ga.	580
Bridgewater	Bridgewater, Va.	234
Brigham Young	Logan, Utah	908
Brown Univ.	Providence, R. I.	1,372
Bryn Mawr	Bryn Mawr, Pa.	479
Bucknell Univ.	Lewisburg, Pa.	938
Buena Vista	Storm Lake, Iowa	120
Buffalo Univ.	Buffalo, N. Y.	1,450
Burleson	Greenville, Tex.	235
Butler	Indianapolis, Ind.	680
California, Univ. of	Berkeley, Calif.	12,370
Campion	Prairie du Chien, Wis.	102
Canisius	Buffalo, N. Y.	1,016
Capital Univ.	Columbus, Ohio	391
Carleton	Northfield, Minn.	740
Carnegie Inst. Tech.	Pittsburgh, Pa.	4,222
Carroll	Waukesha, Wis.	350
Carthage	Carthage, Ill.	267
Case School Ap. Science	Cleveland, Ohio	800
Catholic Univ. of Amer.	Washington, D. C.	1,835
Cedarville	Cedarville, Ohio	204
Central	Pella, Iowa	224
Central	Fayette, Mo.	250
Central Baptist	Conway, Ark.	210
Central Normal	Danville, Ind.	800
Central Wesleyan	Warrentown, Mo.	400
Centre	Danville, Ky.	284
Charleston, College of	Charleston, S. C.	138
Chicago, Univ. of	Chicago, Ill.	11,365
Chicora	Columbia, S. C.	395
Cincinnati Univ.	Cincinnati, Ohio	3,954
Citadel, The	Charleston, S. C.	297
Clarendon	Clarendon, Tex.	435
Clark	Worcester, Mass.	278
Clark Univ.	Atlanta, Ga.	425
Clarkson School of Tech.	Potsdam, N. Y.	195
Coe	Cedar Rapids, Iowa	1,248
Coker	Hartsville, S. C.	352
Colby	Waterville, Me.	475
Colgate Univ.	Hamilton, N. Y.	892
Colorado	Colorado Springs, Col.	682
Colorado School of Mines	Golden, Col.	472
Colorado State Teachers	Greeley, Col.	4,709
Colorado, Univ. of	Boulder, Col.	2,005
Colorado Woman's	Denver, Col.	125
Columbia Univ.	New York, N. Y.	25,734
Connecticut (Fem.)	New London, Conn.	350
Cooper	Sterling, Kan.	200
Cooper Union	New York, N. Y.	2,570
Cornell	Mt. Vernon, Iowa	625
Cornell Univ.	Ithaca, N. Y.	5,700
Cotner	Bethany, Neb.	251
Cox	College Park, Ga.	175
Creighton Univ.	Omaha, Neb.	1,851
Culver-Stockton	Canton, Mo.	250
Cumberland Univ.	Lebanon, Tenn.	250
Dakota Wesleyan Univ.	Mitchell, S. D.	270
Dallas, Univ. of	Dallas, Tex.	170
Daniel Baker	Brownwood, Tex.	150
Dartmouth	Hanover, N. H.	1,888
Davidson	Davidson, N. C.	500
Davis & Elkins	Elkins, W. Va.	1,153
Defiance	Defiance, Ohio	472
Delaware	Newark, Del.	491
Denison Univ.	Granville, Ohio	953
Denver Univ.	Denver, Col.	1,729
De Paul Univ.	Chicago, Ill.	1,500
De Pauw Univ.	Greencastle, Ind.	1,153

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Name	Location	No. of St'd'ts
Des Moines	Des Moines, Iowa	1,550
Detroit, Univ.	Detroit, Mich.	1,910
Dickinson	Carlisle, Pa.	450
Doane	Crete, Neb.	198
Drake Univ.	Des Moines, Iowa	2,275
Drexel Inst.	Philadelphia, Pa.	2,500
Drury	Springfield, Mo.	375
Dubuque	Dubuque, Iowa	300
Duquesne Univ.	Pittsburgh, Pa.	2,500
Earlham	Richmond, Ind.	541
Elizabeth	Salem, Va.	108
Ellsworth	Iowa Falls, Iowa	410
Elmira	Elmira, N. Y.	400
Elon	Elon College, N. C.	368
Emory Univ.	Atlanta, Ga.	1,020
Emory and Henry	Emory, Va.	225
Emporia	Emporia, Kan.	313
Erskine	Due West, S. C.	132
Eureka	Eureka, Ill.	303
Evansville	Evansville, Ind.	275
Ewing	Ewing, Ill.	110
Fairmount	Wichita, Kan.	339
Fargo	Fargo, N. D.	601
Findlay	Findlay, Ohio	425
Fisk Univ.	Nashville, Tenn.	604
Flora MacDonald	Red Springs, N. C.	315
Florida (Fem.)	Tallahassee, Fla.	771
Florida, Univ. of	Gainesville, Fla.	843
Fordham Univ.	Fordham, N. Y.	2,900
Franklin	Franklin, Ind.	576
Franklin and Marshall	Lancaster, Pa.	300
Friends Univ.	Wichita, Kan.	250
Furman, Univ.	Greenville, S. C.	375
Gallaudet	Washington, D. C.	116
Geneva	Beaver Falls, Pa.	636
Geo. Peabody for Teach.	Nashville, Tenn.	1,828
George Washington Univ.	Washington, D. C.	5,102
Georgetown	Georgetown, Ky.	358
Georgetown Univ.	Washington, D. C.	3,311
Georgia School of Tech.	Atlanta, Ga.	2,634
Georgia, Univ. of	Athens, Ga.	1,200
Gettysburg	Gettysburg, Pa.	522
Gonzaga Univ.	Spokane, Wash.	700
Goshen	Goshen, Ind.	300
Goucher	Baltimore, Md.	855
Graceland	Lamoni, Iowa	325
Grand Island	Grand Island, Neb.	87
Greensboro	Greensboro, N. C.	363
Greenville	Greenville, Ill.	383
Grenada	Grenada, Miss.	250
Grinnell	Grinnell, Iowa	830
Grove City	Grove City, Pa.	350
Guilford	Guilford College, N. C.	240
Gustavus Adolphus	St. Peter, Minn.	365
Hamilton	Clinton, N. Y.	314
Hamline Univ.	St. Paul, Minn.	500
Hampden-Sidney	Hampden-Sidney, Va.	143
Hanover	Hanover, Ind.	313
Hartshorn Memorial	Richmond, Va.	256
Hawaii, Univ. of	Honolulu, T. H.	432
Harvard Univ.	Cambridge, Mass.	7,454
Harvey, Morris	Barboursville, W. Va.	241
Hastings	Hastings, Neb.	454
Haverford	Haverford, Pa.	209
Hedding	Abingdon, Ill.	152
Heidelberg Univ.	Tiffin, Ohio	396
Henderson-Brown	Arkadelphia, Ark.	350
Hendrix	Conway, Ark.	380
Hillsdale	Hillsdale, Mich.	75
Hiram	Hiram, Ohio	306
Hobart	Geneva, N. Y.	240
Hollins	Hollins, Va.	300
Holy Cross	Worcester, Mass.	735
Hood	Frederick, Md.	265
Hope	Holland, Mich.	487
Howard	Birmingham, Ala.	502
Howard Univ.	Washington, D. C.	1,810
Hunter	New York, N. Y.	1,208
Huron	Huron, S. D.	475
Idaho	Caldwell, Idaho	210
Idaho, Univ. of	Moscow, Idaho	1,289
Illinois	Jacksonville, Ill.	523
Illinois State Normal	Normal, Ill.	2,800
Illinois, Univ. of	Urbana, Ill.	9,493
Illinois Wesleyan Univ.	Bloomington, Ill.	520
Illinois Woman's Col.	Jacksonville, Ill.	432
Indiana Central Univ.	Indianapolis, Ind.	227
Indiana State Normal Sc.	Muncie, Ind.	229
Indiana Univ.	Bloomington, Ind.	3,914
Industrial Arts	Denton, Tex.	1,314
International Y. M. C. A.	Springfield, Mass.	317
Iowa State	Ames, Iowa	6,100
Iowa State Teachers	Cedar Falls, Iowa	5,250
Iowa State Univ.	Iowa City, Iowa	5,341
Iowa Wesleyan Univ.	Mt. Pleasant, Iowa	216
Irving Col. & Music Con.	Mechanicsburg, Pa.	135
Jamestown	Jamestown, N. D.	256
Jefferson	Convent, La.	175
Jewell, Wm.	Liberty, Mo.	325
Johns Hopkins Univ.	Baltimore, Md.	3,487
Judson	Marion, Ala.	292
Juniata	Huntingdon, Pa.	325
Kalamazoo	Kalamazoo, Mich.	312
Kansas City Univ.	Kansas City, Kan.	166
Kansas, Univ. of	Lawrence, Kan.	3,681
Kansas Wesleyan	Salina, Kan.	552
Kentucky, Univ. of	Lexington, Ky.	2,425
Kentucky, Wesleyan	Winchester, Ky.	1,730
Kenyon	Gambier, Ohio	171
Knox	Galesburg, Ill.	550
Knoxville	Knoxville, Tenn.	424
Lafayette	Easton, Pa.	950
La Grange	La Grange, Ga.	157
Lake Forest	Lake Forest, Ill.	225
Lander	Greenwood, S. C.	315
Lane	Jackson, Tenn.	425
La Salle	Philadelphia, Pa.	450
Lawrence	Appleton, Wis.	1,075
Lebanon Valley	Annville, Pa.	325
Lehigh Univ.	Bethlehem, Pa.	1,934
Leland Stanford Jr. Univ.	Stanford Univ., Calif.	2,500
Lenoir	Hickory, N. C.	250
Lewis Institute	Chicago, Ill.	4,000
Lincoln	Lincoln, Ill.	190
Lincoln Memorial Univ.	Harrogate, Tenn.	738
Lincoln Univ.	Lincoln Univ., Pa.	221
Little Rock	Little Rock, Ark.	275
Livingston	Salisbury, N. C.	1,026
Lombard	Galesburg, Ill.	250
Louisburg	Louisburg, N. C.	140
Louisiana	Pineville, La.	307
Louisiana State Univ.	Baton Rouge, La.	1,378
Louisville Univ.	Louisville, Ky.	800
Lowell Textile School	Lowell, Mass.	1,065
Loyola	Los Angeles, Calif.	333
Loyola	Baltimore, Md.	350
Loyola Univ.	New Orleans, La.	1,100
Luther	Decorah, Iowa	254
McKendree	Lebanon, Ill.	175
McMinnville	McMinnville, Ore.	245
McPherson	McPherson, Kan.	600
Macalester	St. Paul, Minn.	550
Maine, Univ. of	Orono, Me.	1,446
Manhattan	New York, N. Y.	350
Mansfield (Fem.)	Mansfield, La.	333
Marietta	Marietta, Ohio	400
Marquette Univ.	Milwaukee, Wis.	3,500
Martin	Pulaski, Tenn.	250
Maryland	Annap. & Balto., Md.	250
Maryland, for Women	Lutherville, Md.	125

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Name	Location	No. of St'd'ts
Maryland, Univ. of	College Park, Md.	1,776
Maryville	Maryville, Tenn.	933
Mass. Inst. of Tech.	Cambridge, Mass.	3,435
Mercer Univ.	Macon, Ga.	486
Meredith	Raleigh, N. C.	428
Meridian	Meridian, Miss.	350
Miami Univ.	Oxford, Ohio	1,062
Michigan, Univ. of	Ann Arbor, Mich.	10,822
Middlebury	Middlebury, Vt.	447
Midland	Fremont, Neb.	486
Milligan	Johnson City, Tenn.	142
Milliken, James, Univ.	Decatur, Ill.	1,400
Mills	Oakland, Calif.	425
Millsaps	Jackson, Miss.	326
Milton	Milton, Wis.	110
Milton Univ.	Baltimore, Md.	250
Milwaukee-Downer	Milwaukee, Wis.	405
Minnesota, Univ. of	Minneapolis, Minn.	8,200
Mississippi	Clinton, Miss.	281
Miss. Indust. Inst.	Columbus, Miss.	900
Miss. State Col. for Women	Columbus, Miss.	950
Mississippi, Univ. of	University P. O., Miss.	620
Missouri, Univ. of	Columbia, Mo.	5,200
Missouri Valley	Marshall, Mo.	203
Missouri Wesleyan	Cameron, Mo.	282
Monmouth	Monmouth, Ill.	488
Montana State	Bozeman, Mont.	961
Montana State School of Mines	Butte, Mont.	142
Montana, Univ. of	Missoula, Mont.	1,434
Montana Wesleyan	Helena, Mont.	200
Moravian C. & S. (Fem.)	Bethlehem, Pa.	225
Morehouse	Atlanta, Ga.	585
Morgan	Baltimore, Md.	400
Morningside	Sioux City, Iowa	1,006
Mount Holyoke	South Hadley, Mass.	787
Mount St. Charles	Helena, Mont.	161
Mount St. Joseph's	Baltimore, Md.	246
Mount St. Mary's	Emmitsburg, Md.	225
Mount Union	Alliance, Ohio	415
Muhlenberg	Allentown, Pa.	248
Murphy	Sevierville, Tenn.	475
Muskingum	New Concord, Ohio	1,180
Nebraska, Univ. of	Lincoln, Neb.	7,121
Nebraska Wesleyan Univ.	University Place, Neb.	882
Nevada, Univ. of	Reno, Nev.	556
Newberry	Newberry, S. C.	170
Newcomb Memorial	New Orleans, La.	550
New Hampshire State	Durham, N. H.	891
N. M. State Sch. of Mines	Socorro, N. M.	125
New Mexico, Univ. of	Albuquerque, N. M.	425
New Orleans Univ.	New Orleans, La.	600
New Rochelle	New Rochelle, N. Y.	340
N. Y., College of City of	New York, N. Y.	12,543
New York State College of Forestry	Syracuse, N. Y.	284
New York State College for Teachers	Albany, N. Y.	598
New York Univ.	New York, N. Y.	12,943
Niagara Univ.	Niagara Falls, N. Y.	450
North Carolina, Univ. of	Chapel Hill, N. C.	2,300
North Dakota Univ.	Grand Forks, N. D.	1,500
Northland	Ashland, Wis.	179
Northwestern	Naperville, Ill.	529
Northwestern	Watertown, Wis.	252
Northwestern Univ.	Evanston, Ill.	7,752
Norwich Univ.	Northfield, Vt.	250
Notre Dame Univ.	Notre Dame, Ind.	1,581
Oakland City	Oakland City, Ind.	475
Oberlin	Oberlin, Ohio	1,607
Occidental	Los Angeles, Calif.	506
Ogden	Bowling Green, Ky.	125
Ohio Northern Univ.	Ada, Ohio	1,043
Ohio State Univ.	Columbus, Ohio	8,313
Ohio, Univ. of	Athens, Ohio	1,219
Ohio Wesleyan Univ.	Delaware, Ohio	1,500
Oklahoma Agri.	Stillwater, Okla.	1,900
Oklahoma (Fem.)	Chickasha, Okla.	400
Oklahoma, Univ. of	Norman, Okla.	4,500
Omaha Univ.	Omaha, Neb.	600
Oregon, Univ. of	Eugene, Ore.	4,276
Ottawa Univ.	Ottawa, Kan.	453
Otterbein	Westerville, Ohio	485
Oxford	Oxford, Ohio	223
Ouachita, College of the	Clarksville, Ark.	200
Pacific	San Jose, Calif.	403
Pacific	Newberg, Ore.	141
Pacific Union	Saint Helena, Calif.	400
Pacific Univ.	Forest Grove, Ore.	225
Park	Parkville, Mo.	300
Parsons	Fairfield, Iowa	449
Pasadena Univ.	Pasadena, Calif.	600
Payne, Howard	Brownwood, Tex.	750
Penn	Oskaloosa, Iowa	618
Pennsylvania (Fem.)	Pittsburgh, Pa.	305
Pennsylvania Military	Chester, Pa.	100
Pennsylvania State	State College, Pa.	3,000
Pennsylvania, Univ. of	Philadelphia, Pa.	11,182
Philander Smith	Little Rock, Ark.	400
Philippines, Univ. of	Manila, P. I.	4,130
Phillips Univ.	Enid, Okla.	1,503
Piedmont	Demorest, Ga.	248
Pikeville	Pikeville, Ky.	400
Pittsburgh, Univ. of	Pittsburgh, Pa.	6,165
Polytechnic Inst.	Brooklyn, N. Y.	1,250
Pomona	Claremont, Calif.	700
Porto Rico, Univ. of	Rio Piedras	2,168
Potomac Univ.	Washington, D. C.	250
Pratt Inst.	Brooklyn, N. Y.	4,440
Presbyterian Col. of S. C.	Clinton, S. C.	150
Princeton Univ.	Princeton, N. J.	1,967
Providence	Providence, R. I.	163
Puget Sound	Tacoma, Wash.	400
Purdue Univ.	Lafayette, Ind.	3,113
Quinn Paul	Waco, Tex.	300
Radcliffe	Cambridge, Mass.	656
Randolph-Macon	Ashland, Va.	198
Randolph-Macon (Fem.	Lynchburg, Va.	618
Redlands Univ.	Redlands, Calif.	351
Reed	Portland, Ore.	280
Rensselaer Poly. Inst.	Troy, N. Y.	1,093
Rhode Island State	Kingston, R. I.	356
Rice Inst.	Houston, Tex.	736
Richmond	Richmond, Va.	725
Rio Grande	Rio Grande, Ohio	455
Ripon	Ripon, Wis.	397
Roanoke	Salem, Va.	270
Rochester Univ.	Rochester, N. Y.	1,554
Rockford	Rockford, Ill.	731
Rock Hill	Ellicott City, Md.	175
Rose Poly. Inst.	Terre Haute, Ind.	250
Rollins	Winter Park, Fla.	370
Russell Sage	Troy, N. Y.	200
Rutgers	New Brunswick, N. J.	715
St. Ambrose	Davenport, Iowa	325
St. Anselm's	Manchester, N. H.	300
St. Bernard	St. Bernard, Ala.	280
St. Bonaventure's	Allegany, N. Y.	550
St. Catherine	St. Paul, Minn.	287
St. Elizabeth	Convent, N. J.	175
St. Francis	Brooklyn, N. Y.	500
St. Francis Xavier	Manhattan Boro, N. Y.	696
St. Ignatius	Cleveland, Ohio	143
St. Ignatius	San Francisco, Calif.	146
St. John's	Annapolis, Md.	210
St. John's	Brooklyn, N. Y.	842
St. John's Univ.	Toledo, Ohio	504
St. John's	Washington, D. C.	352
St. John's Univ.	Collegeville, Minn.	400
St. Joseph's	Philadelphia, Pa.	382

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Name	Location	No. of St'd'ts
St. Joseph's	Collegeville, Ind.	300
St. Lawrence Univ.	Canton, N. Y.	342
St. Louis	San Antonio, Tex.	300
St. Louis Univ.	St. Louis, Mo.	2,618
St. Martin's	Lacey, Wash.	300
St. Mary's	Dayton, Ohio	800
St. Mary's	Notre Dame, Ind.	450
St. Mary's	St. Mary's, Ky.	150
St. Mary's	Oakland, Calif.	460
St. Mary's	Van Buren, Me.	200
St. Mary's School	Raleigh, N. C.	275
St. Mary's	St. Mary's, Kan.	480
St. Michael's	Winooski, Vt.	150
St. Olaf	Northfield, Minn.	792
St. Peter's	Jersey City, N. J.	100
St. Stephen's	Annandale, N. Y.	101
St. Teresa	Winona, Minn.	451
St. Viator's	Bourbonnais, Ill.	418
St. Vincent C. & S.	Beatty, Pa.	569
St. Xavier	Cincinnati, Ohio	648
Salem	Salem, W. Va.	455
Salem	Winston-Salem, N. C.	679
Santa Clara Univ.	Santa Clara, Calif.	164
Scott, Agnes	Decatur, Ga.	456
Seton Hall	South Orange, N. J.	375
Shaw Univ.	Raleigh, N. C.	490
Shorter	North Little Rock, Ark.	618
Shorter	Rome, Ga.	275
Shurtleff	Alton, Ill.	150
Simmons	Abilene, Tex.	963
Simmons	Boston, Mass.	1,378
Simpson	Indianola, Iowa	600
Sioux Falls	Sioux Falls, S. D.	240
Smith	Northampton, Mass.	1,940
Smith, Philander	Little Rock, Ark.	409
South, Univ. of	Sewanee, Tenn.	243
South Carolina, Univ. of	Columbus, S. C.	601
South Dakota State	Brookings, S. D.	1045
South Dakota, Univ. of	Vermilion, S. D.	972
Southern	Clearwater, Fla.	225
Southern Univ.	Baton Rouge, La.	655
Southern Calif., Univ. of	Los Angeles, Calif.	4,861
Southern Meth. Univ.	Dallas, Tex.	1,328
Southwestern	Winfield, Kan.	590
Southwestern Univ.	Los Angeles, Calif.	425
Southwestern Prcs. Univ.	Clarksville, Tenn.	130
Southwestern Univ.	Georgtown, Tex.	667
Spokane Univ.	Spokane, Wash.	174
Spring Hill	Spring Hill, Ala.	334
Stephens Junior	Columbia, Mo.	526
Sterling	Sterling, Kan.	212
Stetson, John B., Univ.	De Land, Fla.	534
Stevens Inst. of Tech.	Hoboken, N. J.	862
Straight	New Orleans, La.	550
Susquehanna Univ.	Selinsgrove, Pa.	325
Swarthmore	Swarthmore, Pa.	500
Sweet Briar	Sweet Briar, Va.	290
Syracuse Univ.	Syracuse, N. Y.	5,797
Tabor	Tabor, Iowa	94
Talladega	Talladega, Ala.	550
Taylor Univ.	Upland, Ind.	270
Teachers of Indianapolis	Indianapolis, Ind.	900
Temple Univ.	Philadelphia, Pa.	7,110
Tennessee	Murfreesboro, Tenn.	125
Tennessee, Univ. of	Knoxville, Tenn.	1,177
Tennessee, Woman's	Murfreesboro	350
Texas Christian Univ.	Fort Worth, Tex.	850
Texas, Univ. of	Austin, Tex.	4,070
Thiel	Greenville, Pa.	282
Toledo, Univ.	Toledo, Ohio	1,450
Transylvania	Lexington, Ky.	275
Trinity	Hartford, Conn.	2136
Trinity	Durham, N. C.	625
Trinity Univ.	Waxahachie, Tex.	350
Tri-State	Angola, Ind.	1,000
Troy Conf. Acad.	Poultney, Vt.	280
Tufts	Tufts College, Mass.	2,128
Tulane Univ.	New Orleans, La.	3,060
Tulsa Univ.	Tulsa, Okla.	516
Tusculum	Greenville, Tenn.	200
Tuskegee Inst.	Tuskegee, Ala.	1,800
Union	Barboursville, Ky.	250
Union	College View, Neb.	525
Union	Schenectady, N. Y.	1,419
Union Univ.	Jackson, Tenn.	725
Upsala	Kenilworth, N. J.	100
Ursinus	Collegeville, Pa.	252
U. S. Military Acad.	West Point, N. Y.	919
U. S. Naval Acad.	Annapolis, Md.	1,971
Upper Iowa Univ.	Fayette, Iowa	425
Utah, Univ. of	Salt Lake City, Utah	2,186
Valparaiso Univ.	Valparaiso, Ind.	1,260
Vanderbilt Univ.	Nashville, Tenn.	1,185
Vassar	Poughkeepsie, N. Y.	1,089
Vermont, Univ. of	Burlington, Vt.	936
Villanova	Villanova, Pa.	510
Virginia Intermont	Bristol, Va.	275
Virginia Military Inst.	Lexington, Va.	579
Virginia Union Univ.	Richmond, Va.	462
Virginia, Univ. of	Charlottesville, Va.	3,546
Wabash	Crawfordsville, Ind.	380
Wake Forest	Wake Forest, N. C.	577
Wartburg	Clinton, Iowa	80
Washburn	Topeka, Kan.	856
Washington	Washington Coll., Tenn.	78
Washington	Chestertown, Md.	90
Washington State	Pullman, Wash.	2,678
Washington, Univ. of	Seattle, Wash.	7,015
Washington Univ.	St. Louis, Mo.	3,833
Washington & Jefferson	Washington, Pa.	438
Washington & Lee Univ.	Lexington, Va.	737
Wellesley	Wellesley, Mass.	1,551
Wells	Aurora, N. Y.	231
Wesleyan	Macon, Ga.	561
Wesleyan Univ.	Middletown, Conn.	550
Wesley	Greenville, Tex.	350
Western (Fem.)	Oxford, Ohio	325
Western Maryland	Westminster, Md.	290
Western Reserve Univ.	Cleveland, Ohio	2,000
Westhampton	Richmond, Va.	280
Westminster	New Wilmington, Pa.	307
Westminster	Fulton, Mo.	153
West Virginia Univ.	Morgantown, W. Va.	2,248
West Virginia Wesleyan	Buckhannon, W. Va.	500
Wheaton	Wheaton, Ill.	250
Wheaton	Norton, Mass.	250
Whitman	Walla Walla, Wash.	411
Wilberforce	Wilberforce, Ohio	990
Williamette Univ.	Salem, Ore.	494
William & Mary	Williamsburg, Va.	476
Williams	Williamstown, Mass.	575
William Woods	Fulton, Mo.	252
Wilmington	Wilmington, Ohio	335
Wilson	Chambersburg, Pa.	390
Winthrop	Rock Hill, S. C.	1,100
Wisconsin, Univ. of	Madison, Wis.	10,370
Wittenberg	Springfield, Ohio	1,025
Wofford	Spartanburg, S. C.	344
Wooster	Wooster, Ohio	700
Worcester Poly.	Worcester, Mass.	577
Wyoming, Univ. of	Laramie, Wyo.	1,000
Yale Univ.	New Haven, Conn.	3,821
Yankton	Yankton, S. D.	420

CANADA

Name	Location	No. of St'd'ts
Acadia Univ.	Wolfville, N. S.	330
Alberta, Univ. of	Edmonton, Alta.	1,103

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Name	Location	No. of St'd'ts
Bishop's College, Univ. of	Lennoxville, Que.	70
British Columbia, Univ. of	Vancouver, B. C.	900
Dalhousie Coll. & Univ.	Halifax, N. S.	600
Emmanuel College	Saskatoon, Sask.	20
King's College, Univ. of	Windsor, N. S.	117
Knox College	Toronto, Ont.	90
Laval Univ.	Quebec, Que.	1,288
Manitoba, Univ. of	Winnipeg, Man.	1,300
McGill Univ.	Montreal, Que.	2,722
McMaster Univ.	Toronto, Ont.	247
Montreal, Univ. of	Montreal, Que.	5,025
Mount Allison Univ.	Sackville, N. B.	240
New Brunswick, Univ. of	Fredericton, N. B.	175
Ottawa, Univ. of	Ottawa, Ont.	900
Queen's Univ.	Kingston, Ont.	2,703
St. Dunstan's Univ.	Charlottetown, P. E. I.	271
St. Francois Xavier's	Antigonish, N. S.	147
St. Michael's	Toronto, Ont.	170
Saskatchewan, Univ. of	Saskatoon, Sask.	1,457
Toronto, Univ. of	Toronto, Ont.	5,237
Trinity College, Univ. of	Toronto, Ont.	160
Victoria Univ.	Toronto, Ont.	562
Western Univ.	London, Ont.	250
Wycliffe	Toronto, Ont.	60

Colombia, a republic in the extreme northwest of South America, having a coast line on both the Atlantic and Pacific Oceans. Area, 461,606 sq. miles; pop. 5,475,000. The Colombian forests are extensive; among the trees are mahogany, cedar, fustic, and other dye-woods and medicinal plants. The mineral productions are emeralds, gold, silver, platinum, copper, iron, lead and coal; petroleum is available, but is unworked. Exports: coffee, precious metals, hides, rubber, bananas. Spanish is the language of the country. In 1903 Panama (q. v.) seceded from Colombia and became a separate republic. For a number of years Colombia refused to recognize the Republic of Panama, but in 1921 the government concluded a treaty with the United States, agreeing to grant recognition to Panama, and receiving in return from the United States $25,000,000 and certain rights in the Panama Canal Zone.

Colosseum, or Coliseum. Early in 1921 it was rumored that the historic Roman Colosseum was to be converted into a kind of variety theater. Interrogated in the Italian Senate, Minister of Public Instruction Croce said that a five-year lease of the Colosseum had been granted to a theatrical company by an under-secretary, and without his knowledge. He added that 'in view of the protests and dissatisfaction the project evoked, he would undertake that it should go no further.'

Conference on Limitation of Armaments. See *Armaments Limitation.*

Curie, MADAME MARIE S., Polish physicist, co-discoverer of radium with her husband, Pierre Curie, was born in Poland and pursued her studies at Warsaw and later at Paris. On the death of her husband in 1906, she succeeded him as professor of physics and director of the physical laboratory at the Sorbonne. In 1911 she received the Nobel prize for chemistry. With her two daughters she visited the United States in May, 1921, in response to a group of American women who had raised over $100.000 to purchase a gram of radium which was presented to her at Washington.

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THE COLOSSEUM

A recent view of all that is left of the mighty amphitheater of Ancient Rome, begun by Vespasian and finished in the year 80 A. D. On its marble seats there was accommodation for nearly 100,000 people who came to see the gladiatorial contests.

D

D, the fourth letter in our alphabet, representing a dental sound formed by placing the tip of the tongue against the root of the upper teeth, and then forcing up vocalized breath, or voice, into the mouth, the soft palate being raised to prevent its escape through the nose. T is formed in the same way, except that it is uttered with breath merely and not with voice. As a numeral D represents 500.

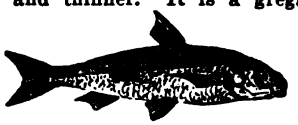
Dab (*Pleuronectes limanda*), a fish belonging to the family of the Pleuronectidæ, or flat-fishes, comprising also the soles, turbots, halibuts, plaice and flounder, the last two being included in the same genus with the dab. It is of a pale-brownish color spotted with white on the side which it usually keeps uppermost, and white on the underside, and has rougher scales than the other members of the same genus. It is preferred to the flounder for the table. The dab is plentiful upon sandy coasts, and may at once be recognized by the roughness of its surface, or structure, which has gained for it the distinctive title of limanda, or file-back—the Latin word *lima* signifying a file. Its flesh is very nutritious, and is said to be in best condition from the end of January to April. It seldom exceeds eight inches in length, though some are stated to be ten inches.

Dabchick (dab'chik). See *Grebe.*

Da Capo (da ka'po; Italian, 'from the head or beginning'), in music, an expression written at the end of a movement to acquaint the performer that he is to return to the beginning, and end where the word *fine* is placed.

Dacca (dak'ka), a commissioner's division of Hindustan in Bengal, at the head of the Bay of Bengal; area, 15,000 square miles. It is one of the richest districts in India, and produces such quantities of rice as to be called the granary of Bengal. The surface is an uninterrupted flat, and is intersected by the Ganges and Brahmapootra—from whose periodical inundations its extraordinary fertility arises. Dacca was at one time celebrated for its hand-woven muslins, which are still hardly to be equaled in their combination of durability and delicacy; but this branch of industry has considerably decayed. Pop. 10,807,825, Mohammedans being in a decided majority.—DACCA, its capital, is about 150 miles northeast of Calcutta. The city has much decayed with the decrease of its staple trade in the celebrated Dacca muslin; suburbs which once extended northwards for 15 miles are now buried in dense jungle. Dacca, being free from violent heats, is one of the healthiest and most pleasant stations in Bengal. Pop. 108,501.

Dace (dās; *Leuciscus vulgāris*), a small river fish of the family Cyprinidæ, and resembling the roach, but longer and thinner. It is a gregarious



Dace (*Leuciscus vulgāris*).

fish, swimming in shoals and inhabiting chiefly deep, clear streams with a gentle current. It seldom exceeds a pound in weight.

Dacelo (da-sē'lō), an Australian genus of kingfishers, one species of which is the 'laughing jackass,' so called on account of its harsh, discordant note.

Dachshund (daks'hụnt). See *Badger Dog.*

Dacia (dā'shi-a), in ancient times, a region north of the Danube, inhabited by the Daci or Getæ, afterwards a Roman province. It was conquered by the emperor Trajan in 101 A.D., but in 274 A.D., in the reign of Aurelian, had to be abandoned by the Roman colonists.

Dacier (dā-syā), ANDRÉ, a learned Frenchman, born in 1651. He studied at Saumur, and in 1672 he went to Paris, where the Duke of Montausier

entrusted him with the editing of the Latin writer Pompeius Festus *ad usum Delphini* (see *Delphin Classics*). In 1683 he married Anne Lefèvre, the daughter of his former teacher, afterwards became perpetual secretary of the French Academy, published many editions and translations of the ancient classics, and died in 1722.—His wife, ANNE, born in 1651, published an edition of Callimachus, and was entrusted with several editions of the classics *ad usum Delphini*. Her learned works were not interrupted by her marriage in 1683. Her translation of Homer and writings on Homeric poetry attracted a good deal of attention. Among her other works were translations of Terence, Plautus, two plays of Aristophanes, Anacreon and Sappho. She died in 1720.

Dacoity (da-koi'ti), originally in the criminal code of India, a robbery committed by an armed band or gang, and technically under the present law of India any robbery in which five or more persons take a part. The term has also been applied more widely.

Dacrydium (da-krid'i-um), a genus of trees of the pine or yew family.

Dacryoma (da-kri-ō'ma), a disease of the lachrymal duct of the eye, by which the tears are prevented from passing into the nose and consequently trickle over the cheek.

Dactyl (dak'til), in versification, a foot consisting of one long followed by two short syllables, or, in English, one accented and two unaccented, as *happily*.

Dactylology (dac-til-ol'o-ji), is the art of communicating ideas or conversing by means of the fingers. It is of great value to the deaf and dumb. See *Deaf and Dumb*.

Daddy-long-legs, a name given to a species of the crane-fly (*Tipŭla oleracĕa*). See *Crane-fly*.

Dado (dā'dō), in classical architecture, the middle part of a pedestal, that is to say, the solid rectangular part between the plinth and the cornice; also called the *die*. In the interior of houses it is applied to a skirting of wood several feet high round the lower part of the walls, or an imitation of this by paper or painting.

Dædalus (dē'da-lus), a mythical Greek sculptor, the scene of most of whose labors is placed in Crete. He is said to have lived three generations before the Trojan war. He is credited with building the famous labyrinth in Crete, and inventing wings for flight, which his son Icarus foolishly attempted to use and was drowned in the Icarian Sea.

Daffodil (daf'ō-dil), the popular name of a European plant which is one of the earliest ornaments of our gardens, being a favorite object of cultivation. Botanically it is *Narcissus pseudo-narcissus*, order Amaryllidaceæ. Many varieties of the daffodil are in cultivation, differing chiefly in bulk and in the form of the flower, which is of a bright primrose-yellow color. There are other forms of the name in local or partial use.

Dagger (dag'er), a weapon resembling a short sword, with sharp-pointed blade. In single combat it was wielded in the left hand and used to parry the adversary's blow, and also to despatch him when vanquished.

Daghestan (dä-ges-tän'), a province of Russia, in the Caucasus, stretching along the west side of the Caspian Sea; area, 11,036 square miles. Its fertile and tolerably cultivated valleys produce good crops of grain, and also silk, cotton, flax, tobacco, etc. The inhabitants, almost all professed Mohammedans, consist chiefly of races of Tartar origin and of Circassians. Capital Derbend. Pop. 605,100.

Dago (dag'ē), an island belonging to Russia, to the s. w. of the entrance of the Gulf of Finland, with productive fisheries. The inhabitants, almost all Swedes, number about 14,000.

Dagoba (da-gō'ba), in Buddhist countries and those which at one time held the Buddhist faith, a solid structure erected to contain some sacred relic or relics, as distinguished from the term *stupa* or *tope*, which in its specific

Ceylonese Dagoba.

application is usually restricted to monuments which commemorate some event or mark some spot sacred to the followers of Buddha. Dagobas are built of brick or stone, are circular in form, generally with a dome-shaped top, and are erected on

natural or artificial mounds, while the stone or brick structure itself sometimes rises to an immense height. These dagobas have always been held in the highest veneration by the Buddhists, and a common mode of testifying their veneration is to walk round them, repeating prayers the while.

Dagobert I (dag'o-bêrt; called the *Great* on account of his military successes), King of the Franks, in 628 succeeded his father, Clothaire II. After a successful, magnificent, but licentious reign, he died at Epinay in 638.

Dagon (dā'gon; probably from the Hebrew *dag*, a fish), the god of the Philistines, whose image is generally believed to have been in the form of a merman, with the upper part human and the extremities, from the waist downards, in the shape of the tail of a fish.

Daguerre (dä-gār), Louis Jacques Mandé, was born in 1789 at Corneilles, dep. Seine-et-Oise. He was a scene-painter at Paris, and as early as 1814 had his attention directed by Nicéphore Niepce to the subject of photographic pictures on metal. In 1829 they made a formal agreement to work out the invention together, but it was not till after Niepce's death, on July 5, 1833, that Daguerre succeeded in perfecting the process since called *daguerreotype*. (See article following.) The new process excited the greatest interest. Daguerre was made an officer of the Legion of Honor, and an annuity of 6000 francs was settled on him, and one of 4000 on the son of Niepce. Daguerre died in 1851.

Daguerreotype Process (da-ger'-ro-tīp), the original photographic process, consisting in sensitizing a silver plate with the vapor of iodine, and then placing it in a camera obscura previously focused, and afterwards developing the picture by vapor of mercury. It is then fixed by immersion in thiosulphate of sodium. After thorough washing and drying the picture is covered with glass to prevent its being rubbed off. Daguerreotype has now been superseded by the collodion and other processes, but the chemical principle is the same.

D'Aguesseau. See *Aguesseau*.

Dagupan (dä-gö'pän), a town of Luzon, Philippine Islands, on the railroad from and about 130 miles N. W. of Manila. It was one of the strongholds of the Philippine insurgents, and was taken from them in November, 1899, by the American troops after a sharp skirmish. Pop. (1903) 20,35-.

Dahabieh (dä-hä-bē'e), a boat used on the Nile for conveyance of travelers. It varies considerably in size; has one or two masts, with a very long slanting yard on each mast supporting a triangular sail, and accommodates from two to eight passengers.

Dahlgren, John Adolf, American admiral, born in Philadelphia in 1809. Died 1870. On his father's side he was of Swedish descent, his father being Swedish consul at Philadelphia. In 1826 he entered the navy as midshipman; in 1834 was engaged on the U. S. Coast Survey. In 1847 he was assigned to the ordnance department. In 1850 he invented a howitzer, and in the same year the high-powered shell gun which bears his name. This gun, a cast-iron smooth-bore cannon, was so cast that the thickness at all points would vary in direct proportion to the varying force between breech and muzzle of the powder discharged at the breech. Dahlgren was also instrumental in securing the adoption of the 11-inch gun for the navy. For distinguished services during the Civil War he was promoted to the rank of rear-admiral. He was chief of the ordnance bureau at the time of his death. His son, Ulric Dahlgren (born 1842; died 1864), was a military officer during the Civil War. He lost his life in a raid undertaken for the purpose of releasing national prisoners at Libby Prison and Belle Isle.

Dahlia (däl'ya; so called after the Swedish botanist Dahl), a genus of plants belonging to the nat. order Compositæ, suborder Corymbiferæ, natives of Mexico. By cultivation an immense number of varieties has been produced, all deriving their origin from *D. coccinea* and *D. variabilis*. The flowers are large and beautiful, sporting into innumerable varieties. It does not stand frost, and has to be taken up during the winter.

Dahlmann (däl'mân), Friedrich Christoph, a distinguished historian of Germany, born in 1785; died in 1860. He was professor at Göttingen and afterwards at Bonn, and distinguished himself as an advocate of liberal measures in politics. Among his principal works is a history of the English revolution.

Dahn (dän), Felix, a German historian, born at Hamburg, in 1834, and became law professor at Würzburg and at Königsberg. His works include *The Kings of the Germans*, *The Migration of Nations*, *Ancient History of the Germanic and Romanic Peoples*, works on

the philosophy of law, poems, novels, plays, etc. He died in 1912.

Dahomey (dä-hō'me), a former negro kingdom of West Africa with an area of about 58,000 sq. miles and a coast line of 70 miles. It lies between German Togoland on the W. and British possessions on the E. and extends to the Niger River on the N. The Dahomans are all pagans and the former king was an absolute tyrant, whose army was partly made up of Amazons, while wholesale human sacrifices formed part of the state ceremonies. The last king, whose capital was Abomey, was deposed by the French in 1900, and the country is now under French rule.

Daimiel (dī-me-el'), a town of Spain, New Castile, province of Ciudad Real, and 20 miles E. N. E. of the town of Ciudad Real, on left bank of the Azuer. The manufactures are linen and woolen fabrics, etc. Pop. 11,825.

Daimios (dī'mi-ōz), a class of feudal lords formerly existing in Japan, but now deprived of their privileges and jurisdiction. By decree of August, 1871, the daimios were made official governors on a salary for the state in the districts which they had previously held as feudal rulers.

Dairen (dī'ren), or TAIREN, a city and seaport of Manchuria, situated on the Liao-tung Peninsula and on the Ta-lien-wan Bay in the Yellow Sea, 25 miles N. of Port Arthur. This city, originally named Dalny, was built by order of the Czar of Russia, for a commercial seaport, on the concession leased from China in 1898, and was thrown open as a port, free to the commerce of all nations December 1, 1901. It was divided into administrative, wholesale, retail and residential sections, the principal official buildings being erected and the streets laid out before opening. A fine town, with handsome buildings and all modern improvements, soon sprang up. The harbor, one of the best and deepest of the Pacific, free of ice the year round, was provided with breakwaters, great stone piers and large docks, including two dry docks. The town formed one of the eastern termini of the Trans-Siberian Railway, and was provided with elevators, gas and electric lighting, etc. The city was occupied by Japanese troops in 1904, during the Russo-Japanese war, and retained by Japan after the war. They renamed it Dairen, and it is now a place of much commercial importance. Pop. about 50,000.

Dairy (dā'ri), the department of a farm which is concerned with the production of milk. After determining on the farm, which should be carefully chosen for location, fertility, abundant water supply, etc., the selection of the cows for the dairy herd is the consideration next in importance. The breeds mainly selected in the United States for their milk and butter-fat producing qualities are the Guernsey, Jersey, Holstein, Ayrshire and shorthorn. The heaviest milk yielders, as a general rule, are the Holstein, but their milk is lower in percentage of butter-fat than that of the other breeds mentioned.

Milk Cooler and Aerator

The cow stable should be planned so that the work of caring for the herd can be conducted with all possible economy of time and labor. Overhead mechanical devices should be installed where practicable, to facilitate handling and distributing the fodder and the removal of the manure. Sanitary principles of construction in the building should be given careful attention. An abundance of light and air is a primal requisite. The floor should be of concrete, both by reason of its durability and the ease and thoroughness with which it can be cleaned.

The milk should be produced and handled under conditions of the utmost cleanliness. The stables should be kept thoroughly clean, and the milk, after being drawn from the cow, should at once be taken from the stable in which the milking is done to a separate room or building where it should be strained and cooled. Various devices for cooling and aerating milk have been invented. One of the most commonly used is shown in the accompanying illustration.

Milch cows should receive a daily grooming similar to that given horses, and the udders should be brushed and wiped off just before milking. If the milking is done by hand, the milker should take pains to be clean about his person, should wash his hands and wear clean outer garments which should not be worn at any other task than milking, and when not in use should be hung in a clean place. Milking should be done with dry hands. "Wet" milking is an extremely uncleanly practice. In large operations the electric milking machine is extensively employed.

The number of dairy cows in the United States in 1900 was 16,292,000; price per head, $31.60; farm value, $514,812,000. In 1920 the number had grown to 23,747,000; price per head, $85.13; farm value, $2,021,681,000. Canada has about 3,500,000 dairy cows. The world's greatest dairying regions are (1) northwest Europe; (2) northern Italy; (3) northern Illinois, S. Wisconsin, central New York, N. W. Vermont; (4) the St. Lawrence lowlands and the peninsula of Ontario.

Dais (dā'is), a platform or raised floor at the upper end of an ancient dining-hall, where the high table stood; also a seat with a high wainscot back, and sometimes with a canopy, for those who sat at the high table. The word is also sometimes applied to the high table itself.

Daisy (dā'si), the name of a plant which is very familiar, and a great favorite (*Bellis perennis*). In the days of chivalry it was the emblem of fidelity in love. Its name is literally day's eye, because it opens and closes its flower with the daylight. It has been naturalized in parts of New England. The common daisy of the United States, the big or ox-eye daisy, also an introduced plant, is properly an aster.

Dâk, DAWK (dąk), in the East Indies, the post; a relay of men, as for carrying letters, despatches, etc., or travelers in palanquins. The route is divided into stages, and each bearer, or set of bearers, serves only for a single stage. A *dâk-bungalow* is a house at the end of a stage designed for those who journey by palanquin.

Dakar (dä-kär'), a fort, naval station and seaport in the French West-African colony of Senegal; capital of the settlement and since 1904 the seat of government. Pop. (1910) 24,800.

Daker-hen (dā'ker-hen), a name sometimes given to the corn-crake or landrail, a bird of the family Rallidæ.

Dakoity (da-koi'ti). See *Dacoity*.

Dakota Formation, a group of rocks belonging to the cretaceous strata and outcropping along the western border of the great plains from Texas to Alberta. West of the Rocky Mountains the Dakota rocks include workable strata of coal or lignite. In a great portion of the Rocky Mountain system the Dakota rests upon Lower Cretaceous, and sometimes Jurassic, strata.

Dakota Indians (da-kō'ta). See *Sioux*.

Dalai Lama (da-lī la'ma). See *Lamaism*.

Dalbeattie (dal-bē'ti), a town in Kirkcudbrightshire, Scotland, with large granite-polishing works, paper-mills, concrete works, etc., and in the neighborhood granite quarries. Pop. 3469.

Dalbergia (dal-bėr'gi-a), a genus of fine tropical forest trees and climbing shrubs, nat. order Leguminosæ, some species of which yield excellent timber. *D. latifolia* (the blackwood, or East Indian rosewood) is a magnificent tree, furnishing one of the most valuable furniture woods. *D. Sissoo* gives a hard, durable wood, called sissoo, much employed in India for railway-sleepers, house and shipbuilding, etc.

Dale, RICHARD, an American naval officer, born at Norfolk, Virginia, in 1756. He was first officer under Paul Jones on the *Bon Homme Richard*, helped materially towards the victory, and was the first man to board the *Serapis* when captured. He was afterwards put in command of an American squadron, the *President* being his flagship. Died in 1826.

Dalecarlia (dal-e-kär'li-a), or DALARNE, a tract in Sweden. The name, meaning 'valley-land,' is kept alive in the minds of the inhabitants by the noble struggles which the Dalecarlians, its inhabitants, made to establish and maintain the independence of the country.

Dalgarno (dal-gär'nō), GEORGE, born at Aberdeen about 1627, took up his residence at Oxford, where he taught a private grammar school for about thirty years, and where he died in 1687. He was a man of great originality and acquirement, and has left behind him two remarkable works, *Signorum*, an essay on a universal or philosophical language, and *Didascalocophus, or the Deaf and Dumb Man's Tutor*.

Dalhousie (dal-hō'zi, JAMES ANDREW BROWN RAMSAY, TENTH EARL AND FIRST MARQUIS OF, born in 1812, a British statesman, was educated at Harrow and at Christchurch, Oxford. After filling the offices of vice-president (1843) and president of the board of trade (1844), he was appointed governor-general of India (1847). In this post he showed high administrative talent, establishing railway lines, telegraphs, irrigation works, etc., on a vast scale. He greatly extended the British empire in India, annexing the Punjab, Oude, Berar, and other native states, as well as Pegu in Burmah. In 1849 he was made a marquis, and obtained the thanks of both

Houses of Parliament. He outstayed his term of office to give the government the aid of his experience in the annexation of Oude; and when he returned to Europe

Marquis of Dalhousie.

in 1856 it was with a constitution so completely shattered that he was never able to appear again in public life, and died on December 19, 1860. As he left no direct male issue, his marquisate expired with him.

Dall, WILLIAM HEALY, naturalist, born at Boston, Massachusetts, in 1845. He became a pupil of Professor Agassiz, was in Alaska with a telegraphic expedition 1866-68; on the Coast Survey in Alaska 1871-84; palæontologist on the Geological Survey 1884-98; since 1880 a curator of the National Museum. He is a member of the National Academy of Sciences. His works include *Alaska and its Resources, Coast Pilot of Alaska, Tribes of the Extreme Northwest, Contributions to North American Ethnology,* etc.

Dallas (dă'ras), GEORGE MIFFLIN, Vice-President of the United States, was born in Philadelphia in 1792, son of Alexander James Dallas, Secretary of the Treasury under President Madison and founder of the second United States Bank. Becoming prominent in the Democratic party, he was elected United States Senator in 1831, was made Minister to Russia in 1837, and elected Vice-President, under President Polk, in 1844. He was Minister to England 1856-61. He died in 1864.

Dallas, county seat of Dallas Co., located in Central and North Texas, on the Trinity River, the largest manufacturing and jobbing city of the Southwest; served by 8 railroads. It is the largest inland cotton market in the world, the largest manufacturer of cotton gin machinery, and among the largest makers of saddlery, harness and leather goods. It is the geographical center of the oil fields of the Southwest. Pop. (1900) 42,638; (1910) 92,104; (1920) 158,976.

Dallas-Celilo Canal, opened after ten years of work at Big Eddy, Oregon, April 28, 1915. The canal opens the Columbia River to steam traffic from the Pacific Ocean to Priest Rapids, Oregon, a distance of 450 miles, and to Lewiston, Idaho, 475 miles up the Snake River, a tributary of the Columbia. The canal cost $4,850,000 and was constructed by the federal government.

Dalles (dalz), the name given to various rapids and cataracts in North America. *The Great Dalles of the Columbia* are about 200 miles from its mouth, where the river is compressed by lofty basaltic rocks into a roaring torrent about 58 yards in width; the *Dalles of the St. Louis* are a series of cataracts near Duluth, Minnesota.

Dalmatia (dal-mā'shi-a) formerly a province of Austria-Hungary, the most southern portion of the Austrian dominions. It consists of a long, narrow, triangular tract of mountainous country and a number of large islands along the northeast coast of the Adriatic Sea, and bounded N. by Croatia, and N.E. by Bosnia and Herzegovina. In breadth it is very limited, not exceeding 40 miles in any part; its whole area is 4940 English square miles. The inland parts of Dalmatia are diversified by undulatory ground, hills, and high mountains; but though there are some rich and beautiful valleys, the country on the whole must be considered poor and unproductive. The Narenta, the Zermagna, the Kerka and the Cettina are the principal rivers, all with short courses. On some of these the scenery is singularly wild and picturesque. The interior is occupied by a much-neglected population, and agriculture is in a very backward state. Timber is scarce, and the country does not produce sufficient grain for its own wants. Apples, pears, peaches, apricots, oranges, pomegranates, etc., are among the fruits; the wines are strong, sweet and full bodied. On the coast fish, especially the tunny and the sardine, abound. The trade of the country is mostly confined to the coast towns, where the population is mainly of Italian extraction. Chief of these are Zara (the capital), Sebenico, Cattaro, Spalato and Ragusa. Among the na-

merous islands sprinkled along the coast many are valuable for their productions, such as timber, wine, oil, cheese, honey, salt and asphalt. The population is divided between the Italians of the coast towns and the peasants of the interior, Slovenian Slavs speaking a dialect of the Slavonic. The majority are Roman Catholics. It came under Austrian rule in 1814. Following the defeat of Austria in 1918 in the European war (q. v.) Dalmatia was removed from Austrian control by the treaty of 1919. Pop. 645,666.

Dalmatian Dog, a variety of dog called also the Danish, spotted, or coach-dog. See *Coach-dog.*

Dalmatic (dal-mat'ik), or DALMATICA, an ecclesiastical vestment worn by the deacon at mass, so called because it was an imitation of Dalmatian costume. It is worn also by bishops under the chasuble. It is a long robe with large, full sleeves with black or red longitudinal stripes and partially unclosed sides. A similar robe was worn by kings and emperors at high solemnities, and continues still to be worn by the sovereigns of England on such occasions.

Dalmatica, Cathedral of Chartres (twelfth century).

Dalny. See *Dairen.*

Dalriada (dal'ri-a-da), the ancient name of a territory in Antrim, called after Carbry Riada, one of its chiefs. In the sixth century a band of Irish from this quarter settled in Argyleshire under Fergus MacErc, and founded the kingdom of the Scots of Dalriada. After being almost extinguished, the Daldriadic line revived in the ninth century with Kenneth Macalpine, and, seizing the Pictish throne, gave kings to the whole of Scotland.

Dalry (dal-rē), a town of Scotland, county of Ayr, on the Garnock, 19 miles S. W. of Glasgow, with ironworks and woolen and worsted mills. Pop. 5316.

Dalrymple (dal-rim'pl). SIR DAVID, Lord Hailes, a Scottish lawyer, antiquary and historian, born at Edinburgh in 1726. He studied at Eton and Utrecht. In 1748 he was called to the bar, and in 1766 was made a judge of the Court of Session. His publications were numerous, but consist principally of new editions and translations. Of his original production the *Annals of Scotland from Malcolm Canmore to the Accession of the House of Stuart,* is the most important. He died in 1792.

Dalrymple, JAMES, first Viscount Stair, a Scottish lawyer and statesman, was born in 1619. In the English Civil war he sided with the Parliament, but afterwards joined the royalists; was made a knight on the Restoration, and in 1671 president of the Court of Session. In 1682 he fell out of favor with the king, and retiring to Holland became an adherent of the Prince of Orange, who, after the revolution, raised him to the peerage. He died in 1695. The connection of his son, the Master of Stair, with the massacre of Glencoe brought some odium upon him in his last years. He wrote: *The Institutes of the Laws of Scotland* (which is still a standard authority). *Vindication of the Divine Perfections* and *An Apology for his Own Conduct.*

Dalrymple, JOHN, first Earl of Stair, born in 1648; died in 1707; son of the preceding, was an able Scottish lawyer and statesman. It was through him that the massacre of Glencoe was perpetuated in 1692. He succeeded his father as viscount in 1695, and in 1703 was created earl. He was largely instrumental in bringing about the union between Scotland and England.

Dal Segno (sen'yō; Italian), often contracted into *D. S.,* means 'from the sign.' In music this expression denotes that the singer or player shall recommence at the place where the sign *S* is put.

Dalton (dal-ton), JOHN, an English chemist and natural philosopher, born in 1766. After teaching for twelve years at Kendal, in 1793 his reputation as a mathematician won for him the chair of mathematics at the New College, Manchester. Here he continued to reside (though the college was removed in 1799), publishing from year to year valuable essays and papers on scientific subjects, while he also lectured in London, and visited Paris. In 1808 he announced in his *New System of Chemical Philosophy* his atomic theory of chemical action, the discovery of which spread his fame over the world. He died in 1844.

Dalton, county seat of Whitfield Co., Georgia, 100 miles N. W. of Atlanta. It has cotton mills, foundries, etc., and exports of ores. Pop. 5222.

Dalton-in-Furness, a town of England, in the county of Lancaster. In its vicinity are extensive ironworks, and the ruins of the magnificent Cistercian abbey of Furness. Pop. (1911) 10,765.

Daltonism, another name for *Color-blindness*, which see.

Dalton's Law. See *Gas*.

Daly (dā'li), Augustin, dramatist born at Plymouth, North Carolina, in 1838; died in 1899. He became a very successful theatrical manager, and established Daly's Theater, New York, in 1879. He served as a dramatic critic, adapted French and German plays, and wrote *Under the Gaslight*, *Divorce*, *Pique*, etc.

Daly, Charles Francis, jurist, born at New York in 1816; died in 1899. He was admitted to the bar in 1837, became judge of the New York Court of Common Pleas in 1844, and was its chief justice for 27 years. He was president of the American Geographical Society from its origin in 1864, and wrote on the history of map making and physical geography, etc.

Dalyell, or Dalzell (dă-el'), Thomas, a Scottish soldier, born about 1599. He was taken prisoner fighting on the royalist side at Worcester, and afterwards escaped to Russia, where he was made a general. Returning to England at the restoration, he was made commander-in-chief of the forces in Scotland, and made himself notorious for his ferocity against the Covenanters. He died in 1685.

Dam, a bank or construction of stone, earth, or wood across a stream for the purpose of keeping back the current to give it increased head, for holding back supplies of water, for flooding lands, or for rendering the stream above the dam navigable by increased depth. Its material and construction will depend on its situation and the amount of pressure it has to bear. For streams which are broad and deep strong materials are required, usually stone masonry bound in Portland cement. There are also dams of earth, reinforced concrete, etc. The common forms of a dam are either a straight line crossing the stream transversely, one or two straight lines traversing it diagonally, or an arc with its convex side towards the current. Among the high masonry dams of the U. S. are the Arrowrock Dam, Idaho, 350 feet; Shoshone, Wyoming, 328 feet; Elephant Butte, New Mexico, 318 feet; Roosevelt, Arizona, 284 feet; Pathfinder, Wyoming, 218 feet.

Damage-feasant (dam-aj-fē'a-zant), in law, doing injury; trespassing, as cattle; applied to a stranger's beasts found in another person's ground, and there doing damage.

Damages (dam'a-jez), in law, pecuniary compensation paid to a person for loss or injury sustained by him through the fault of another. It is not necessary that the act should have been a fraudulent one; it is enough that it be illegal, unwarrantable, or malicious. If, however, a person has suffered a loss through fraud or delict on the part of another, that person has not only a claim to ordinary damages, but may also claim remote or consequential damages, and may estimate the amount of the loss he has sustained not at its real value, but at the imaginary value which he himself may put upon it, subject, however, to the modification of a judge or a jury. In other cases the damages cover only the loss sustained estimated at its real value, together with the expenses incurred in obtaining damages.

Daman. See *Hyrax*.

Daman (dă-măn'), a seaport of Hindustan, at the mouth of the Gulf of Cambay, 100 miles north from Bombay. It belongs to the Portuguese, who conquered it in 1531, and made it a permanent settlement in 1558. It formerly had a large trade, but this has much declined. The settlement, which is governed under Goa, has an area of 148 sq. miles; pop. 64,248.

Damanhoor (dă-man-hōr'), a town of Egypt, capital of the province of Behera, 38 miles E. S. E. of Alexandria. It has manufactures of cotton and wool. Pop. 38,752.

Damar (dă-măr'), or Demar', a town of Yemen, Arabia, 120 miles north by west of Aden. Pop. about 20,000.

Damar. See *Dammar*.

Damaraland (dam'a-ra-land), a German protectorate in South Africa, extending along the Atlantic coast from Cape Frio to Walfisch Bay, and inland to 20° E. long. Area about 100,000 sq. miles, including a large amount of barren lands.

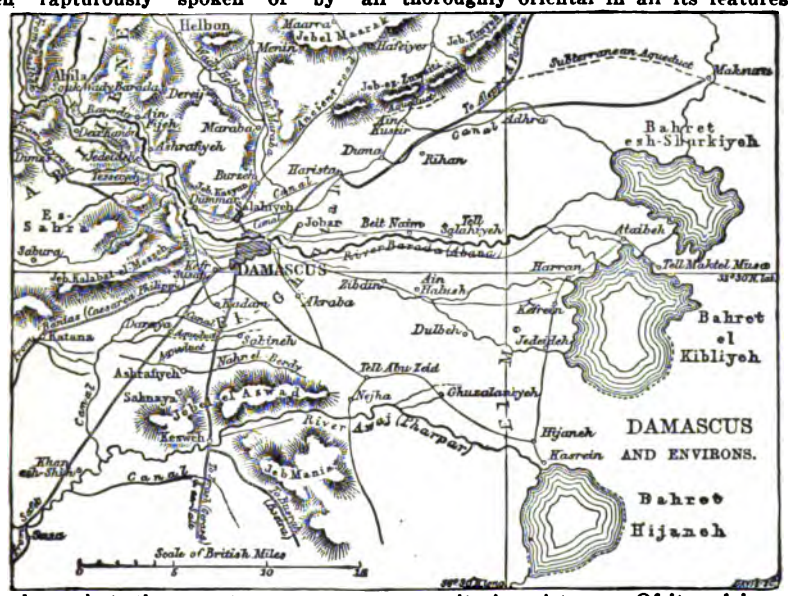
Damar Resin (da'mar). See *Dammar Resin*.

Damascening (dam'a-sēn-ing). See *Damaskeening*.

Damascenus (dam-a-sē'nus), John, John of Damascus, afterwards called also John *Chrysorrhoas* ('golden stream'), was born at Damascus about 676 A.D.; died about 760. He was the author of the first system

of Christian theology in the Eastern Church, or the founder of scientific dogmatics, and his exposition of the orthodox faith enjoyed in the Greek Church a great reputation.

Damascus (da-mas'kus), a celebrated city, formerly capital, present chief town of Syria, supposed to be the most ancient city in the world. It is beautifully situated on a plain which is covered with gardens and orchards and watered by the Barrada. The appearance of the city, as it first opens on the view, has been rapturously spoken of by all



travelers; but the streets are narrow, crooked, and in parts dilapidated, and, except in the wealthy Moslem quarter, the houses are low, with flat-arched doors and accumulations of filth before the entrance. Within, however, there is often a singular contrast, in courts paved with marble and ornamented with trees and spouting fountains, the rooms adorned with arabesques and filled with splendid furniture. Among the chief buildings are the Great Mosque and the Citadel. The bazaars are a notable feature of Damascus. They are simply streets or lanes covered in with high woodwork and lined with shops, stalls, cafés, etc. In the midst of the bazaars stands the Great Khan, it and thirty inferior khans being used as exchanges or marketplaces by the merchants. One of the most important and busiest streets is 'Straight Street,' mentioned in connection with the conversion of the Apostle Paul. Damascus is an important emporium of trade in European manufactures; it is also a place of considerable manufacturing industry in silk, damasks, cotton and other fabrics, tobacco, glass, soap, etc. Saddles, fine cabinet-work and elegant jewelry are well made; but the manufacture of the famous Damascus blades no longer exists. One of the holy Moslem cities, it continues to be the most thoroughly oriental in all its features of any city in existence. Of its origin nothing certain is known; but it is of great antiquity, being mentioned as a place apparently of importance in Gen. xiv, 15. From 1516 till 1918 it was in the hands of the Turks. The British took the city, October 1, 1918, near the close of the European war (q. v.). Pop. 300,000.

Damascus-steel, a kind of steel originally made in Damascus and the East, greatly valued in the making of swords for its hardness of edge and flexibility. It is a laminated metal of pure iron and steel of peculiar quality, carbon being present in excess of ordinary proportions, produced by careful heating, laborious forging, doubling and twisting.

Damask (dam'ask), the name given to textile fabrics of various

materials, ornamented with raised figures of flowers, landscapes, and other forms, being the richest species of ornamental weaving, tapestry excepted. Damask is very commonly made in linen for table napery.

Damaskeening (d a m-a s-kēn' ing), the ornamenting of iron and steel with designs produced by inlaying or incrusting with another metal, as gold, silver, etc., by etching, and the like.

Damasus (dam'a-sus), the name of a pope born about 305, reigned 366-384. He was a friend of St. Jerome, whom he led to undertake the improved Latin version of the Bible known as the Vulgate.

Dambool (d a m-b ō l'), a village of Ceylon, 70 miles northeast of Colombo, at which is a rock containing a number of caves, in one of which is a colossal statue of Buddha hewn out of the rock.

Dames of the Revolution, an American society founded in 1896, its membership being confined to women of direct descent from an ancestor who assisted in establishing the independence of the United States during the Revolutionary war.

Dame's-violet, THE ROCKET, the popular names of *Hesperis matronālis*, nat. order Brassiaceæ, stem single, erect, 3 to 4 feet high, leaves lanceolate, flowers purple, often double, is a fine garden perennial, said to be native about Lake Huron.

Damien (dā-mē-aṇ), FATHER, a Catholic missionary, born in Belgium in 1840. Admitted to holy orders at the age of nineteen, his life was one of the noblest self-sacrifice. He sought the leper settlement of the Hawaiian Islands in 1874 and spent the remainder of his life among these unfortunates as physician and helper. Leprosy attacked him in 1885, but he worked on devotedly till his death in 1889.

Damiens (dā-mē-aṇ), ROBERT FRANÇOIS, notorious for his attempt to assassinate Louis XV, was the son of a poor farmer, and born in 1715 in the village of Tieulloy. His somber and obstinate disposition early obtained him the name of *Robert-le-Diable*. After enlisting as a soldier he became a house-servant in various establishments in Paris, and, having robbed one of his masters, he had to save himself by flight. After spending some months in different cities, in 1756 he returned to Paris with a mind which seems to have become disordered. On January 5, 1757, as Louis XV was getting into his carriage to return from Versailles to Trianon, he was stabbed by Damiens in the right side. The wound was of a trifling nature, and Damiens, who made no attempt to escape, declared he never intended to kill the king. Damiens was condemned and torn in quarters by horses March 28, 1757, on the Place de Grève at Paris.

Damietta (da-mi-et'a), a town of Egypt, on one of the principle branches of the Nile, about 6 miles from its mouth. It contains some fine mosques, bazaars and marble baths. Alexandria has long diverted the great stream of commerce from Damietta, but the latter has still a considerable trade with the interior in fish and rice. The ancient town of Damietta stood about 5 miles nearer the sea. Pop. (1907) 29,354.

Dammar (d a m' a r; or DAM'MARA) PINE, a genus of trees of the nat. order Coniferæ, distinguished by their large, lanceolated, leathery leaves, and by their seeds having a wing on one side instead of proceeding from the end. The *Dammāra orientālis* is a lofty tree of the East India Archipelago, attaining on some of the Molucca Islands a height of from 80 to 100 feet. It yields one variety of dammar resin. The Kauri pine, or *Dammāra australis*, found in the North Island of New Zealand, is a magnificent tree, rising to a height of 150 to 160 feet, and yielding kauri gum. See *Kauri*.

Dammar Resin, a gum or resin of several kinds produced by different trees. The East Indian or cat's-eye resin is got from the *Dammāra orientālis*, a tree of the East Indian Islands (see above), and is used for making varnishes for coach-builders, painters, etc. In its native localities it is burned as incense, and is also used for caulking ships. *Sal* dammar is produced by the sal tree of India (*Shorēa robusta*), *rock* dammar by *Hopēa odorāta* and other species of trees; both yield good varnishes. *Black* dammar is another Indian species.

Dammooda (da-mō'da), a river of Hindustan, presidency of Bengal, which enters the Hooghly near its mouth; length, 350 miles.

Damocles (dam'o-klēz), a native of Syracuse, and one of the courtiers and flatterers of the tyrant Dionysius the Elder. One day he was extolling the grandeur and happiness of Dionysius, whereupon the latter invited him to a magnificent banquet, where he would be regaled with regal fare and regal honors. In the midst of the entertainment, however, Damocles hap-

pened to look upwards, and perceived with dismay a naked sword suspended over his head by a single hair, and was thus taught to form a better estimate of royal honors.

Damon and Pythias (dā'mun, pi'-the-as), two illustrious Syracusans, celebrated as models of constant friendship. Pythias had been unjustly condemned to death by Dionysius the Younger, tyrant of Sicily; but, having to leave Syracuse to arrange his affairs, his friend Damon was taken as a pledge that Pythias should return on the day fixed. Pythias, however, being unexpectedly detained, had great difficulty in reaching Syracuse in time to save Damon being executed in his place; and Dionysius was so affected by this proof of their friendship that he pardoned Pythias.

The Knights of Pythias, a fraternal order established in the United States, has this pleasant incident for its basis. Its growth has been remarkably rapid, and lodges are in existence in every state of the Union. See *Knights of Pythias*.

Dampier (dam'pi-er), WILLIAM, an English navigator, born in 1652. He was descended from a good family in Somersetshire; but losing his father when young, he was sent to sea, and soon distinguished himself as an able mariner. After serving in the Dutch war, in the Bay of Campeachy as a log-wood-cutter, in a band of privateers on the Peruvian coasts, in a Virginian expedition against the Spanish settlements in the South Seas, and other enterprises of a similar nature, he returned home in 1691. In 1697 he published *Voyage Round the World*, which became very popular, and next year he was appointed commander of a royal sloop-of-war, fitted out for a voyage of discovery in the Australian seas. The vessel, on the home voyage (1700), foundered off the isle of Ascension, and Dampier returned to England. In 1707 he accompanied Captain Woodes Rogers around the world. He died in 1715.

Damps, noxious exhalations issuing from the earth, and deleterious or fatal to animal life. Damps exist in wells which continue long covered and not used, and in mines and coal-pits; and sometimes they issue from the old lavas of volcanoes. These damps are distinguished by miners under the names of *choke-damp*, consisting chiefly of carbonic acid gas, which instantly suffocates; and *fire-damp*, consisting chiefly of light carburetted hydrogen, so called from its tendency to explode.

Damrosch (dam'rosh), FRANK HEINO (1859-), an American musical director, son of Leopold Damrosch (q. v.), born at Breslau, Prussia. He established the People's Choral Union, New York, 1892; was director of Oratorio Society and Symphony Concerts for Young People, 1898-1912; director of Institute of Musical Art from 1905.

Damrosch, LEOPOLD (1832-85), an American musician, conductor and composer, born at Posen, Prussia. In 1871 he became conductor of the Arion Society, New York. In 1873 he organized the Oratorio Society, and in 1878 the Symphony Society of New York. In 1884 he was director of the Metropolitan Opera House, New York.

Damrosch, WALTER (1862-), an American musician, conductor and composer, son of former, born at Breslau, Prussia. In 1885 he succeeded his father as conductor of the Oratorio and Symphony Societies. He reorganized the Symphony Society in 1903 and made it one of the most famous orchestras in America. He wrote two operas, *The Scarlet Letter* and *Cyrano*, and a number of songs.

Damson (dam'sen), a variety of the common plum (*Prunus domestica*). The fruit is rather small and oval, and its numerous subvarieties are of different colors; black, bluish, dark purple, yellow, etc. The damson (corruption of Damascene), as its name imparts, is from Damascus.

Dan (Hebrew, meaning 'judgment'), one of the sons of Jacob by his concubine Bilhah. At the time of the exodus the Danites numbered 62,700 adult males, being then the second tribe in point of numbers. Samson was a member of this tribe.

Dana (dā'na), CHARLES ANDERSON, editor, was born in Hinsdale, New Hampshire, in 1819. After association with the New York *Tribune* for 14 years as one of the proprietors and managing editor, in 1863 he was appointed Assistant Secretary of War. After 1868 he was the editor of the New York *Sun*. Perhaps more than any other journalist his personality was identified with his newspaper. He died in 1897.

Dana, FRANCIS, statesman, born at Cambridge, Massachusetts, in 1743; died in 1811. He became an able lawyer, joined the 'Sons of Liberty,' and was active in the measures leading to the Revolution. He was a prominent leader in State and national councils during the war, was sent to Russia as minister in 1781, was judge of the Supreme Court of Massachusetts in 1785, and was chosen

a member of the constitutional convention of 1787, but ill health prevented his serving.

Dana, JAMES DWIGHT, an American naturalist, born in 1813, and after 1855 a professor at Yale College. His writings include *System of Mineralogy*, *Manual of Mineralogy*, *Coral Reefs and Islands*, *Manual of Geology*, *Text-book of Geology*, and many reports and papers. He died in 1895.

Dana, RICHARD HENRY, an American writer, born in 1787, at Cambridge in Massachusetts; educated at Harvard; published several collections of poems and two novels. He died in 1879. —His son RICHARD HENRY (born in 1815; died in 1882) was the author of the well-known work *Two Years before the Mast*, the result of his own experiences during a voyage recommended to him on account of his health.

Danae (dan'ā-ē), in Greek mythology, daughter of Acrisius, king of Argos. She was shut up by her father in a brazen tower, but Zeus, inflamed with passion for her, transformed himself into a golden shower, and descended through the apertures of the roof into her embraces. Set adrift on the waves by her father, she reached safely one of the Cyclades, where her child, Perseus, was brought up.

Danaides (da-nā'i-dēz), the fifty daughters of Danaus, a mythological character who, in peril from his brother, the King of Lybia, fled to Argos, where he was chosen king. The fifty sons of Ægyptus, the Lybian king, followed him and under pretense of friendship, sought the hands of his daughters in marriage. Danaus consented, but gave each of his daughters a dagger, bidding them to murder their husbands on the bridal night in revenge for his treatment by Ægyptus. All did so except one, Hypermnestra, who allowed Lynceus, her husband, to escape. The poets tell us that in the underworld the Danaides, as a punishment for their crimes, were compelled forever to pour water into a vessel full of holes.

Danbury (dan'ber-i), a city, one of the capitals of Fairfield Co., Connecticut, 65 miles N. N. E. of New York. It has many large hat factories, also manufactures of plated ware, boxes, underwear and machine shops, etc. Pop. (1910) 23,502; (1920) 22,325.

Danbury Hatters' Case, a famous case in the history of capital and labor. After eleven years' litigation it came to an end on January 5, 1915, when the United States Supreme Court unanimously affirmed the decision of the lower courts, awarding to D. E. Loewe and Co., of Danbury, Connecticut, $250,130 damages for a nation-wide boycott declared by the American Federation of Labor against the plaintiff for refusal to unionize his shops.

Danby (dan'bi), FRANCIS, painter, born near Wexford, England, 1793. He established his reputation in 1823 by his *Sunset at Sea after a Storm*; and in 1825, by his *Delivery of Israel out of Egypt*, obtained the honor of being admitted as an associate of the Academy. Among his subsequent pictures the most celebrated are the *Opening of the Sixth Seal*, exhibited in 1828; the *Age of Gold*, in 1831; *The Enchanted Island—Sunset*, in 1841; *The Contest of the Lyre and Pipe in the Vale of Tempe*, in 1842; and the *Painter's Holiday*, in 1844. Danby's excellence lay in his delineations of scenery, and the poetic halo with which he contrived to invest them. He died in 1861.

Dance of Death. See *Death, Dance of.*

Dancing (dans'ing), a studied and rhythmical movement of the limbs generally adjusted to the measure of a tune. In ancient times it was generally an expression of religious, patriotic, or military feeling, as in the case of the dance of David before the ark, the choric dances, or the Pyrrhic dance of the Greeks. The Romans, however, like the orientals, had their dancing done by hired slaves. This solemn character of the dance has declined with the progress of refinement and civilization, and it is now nothing more than an elegant social amusement and an agreeable spectacle at public entertainments.

Dancing Disease, an epidemic nervous disorder apparently allied to hysteria and chorea, occasionally prevalent in Germany and Italy during the middle ages. In 1734, during the celebration of the festival of St. John at Aix-la-Chapelle, the streets became crowded with men and women of all ranks and ages, who commenced dancing in a wild and frantic manner till they dropped down with fatigue. The mania spread to Cologne, Metz and Strasburg, and gave rise to much imposture, profligacy and disorder. At the beginning of the seventeenth century the epidemic began to decline, and is only known now as a nervous affection in individual cases.

Dandelion (dan-de-lī'on, *Leontōdon Taraxacum*), a plant belonging to the nat. order Compositæ, indigenous to Europe, but now also common in America. The leaves are all

radical, and runcinate or jagged on the margin. From this circumstance has been derived its French name *dent de lion* (lion's tooth), of which the English appellation is a corruption. The stems are hollow and have one large bright-yellow flower and a tapering, milky, perennial root, which acts as an aperient and tonic, and is much esteemed in affections of the liver. The whole plant is full of a milky and bitter juice. (See *Taraxacin.*) The seed of the plant is furnished with a white pappus, and is transported far and wide by the wind.

Dandie Dinmont Terrier, a peculiar breed of the Scotch terrier, so called from the Border farmer of that name who figures in Scott's novel of *Guy Mannering.* This breed is known by its short legs, wiry and abundant hair, and large ears. It is very courageous when fully grown. It is usually either of a light-brown or a bluish-gray color, termed respectively the 'Mustard' and the 'Pepper' variety.

Dandolo, ANDREA, Doge of Venice and of an illustrious Venetian family, was born about 1310, and made doge in 1343. He carried on a war against the Turks with various success, and greatly extended Venetian commerce by opening a trading connection with Egypt. He wrote a chronicle of Venice, comprising the history of the republic from its commencement to 1342, which was published in Muratori's collection. He died in 1354.

Dandolo (dän'do-lo), ENRICO, Doge of Venice, was chosen to that office in 1192, at the advanced age of eighty-four. On the formation of the Fourth Crusade Dandolo induced the senate to join in it, and by its help recovered the revolted town of Zara. Constantinople was next stormed, the blind old doge, it is said leading the attack. In the division of the Byzantine Empire the Venetians added much to their dominions. Dandolo died at Constantinople in 1205, at the age of ninety-seven.

Danebrog, DANNEBROG (dän'e-brog), literally 'the cloth or banner of the Danes,' a Danish order of knighthood, said to have been instituted in 1219, and revived in 1693. The decorations consist of a cross of gold *pattée,* enameled with white, and suspended by a white ribbon embroidered with red.

Danegelt, DANEGELD (dän'geld; that is, 'Dane tax'), in English history, an annual tax laid on the English nation for maintaining forces to oppose the Danes, or to furnish tribute to procure peace. It was at first one shilling, and ultimately seven, for every hide of land, except such as belonged to the church. When the Danes became masters of England the *danegelt* was a tax levied by the Danish princes on every hide of land owned by the Anglo-Saxons.

Danelagh, DANELAW (dän'lą), the ancient name of a strip of territory extending along the east coast of England from the Thames to the Tweed, ceded by Alfred to Guthrun, King of the Danes, after the battle of Ethandune. This name it retained till the Norman conquest, its inhabitants being governed by a modification of Danish law and not by English law.

Danewerk (dä'ne-verk; Ger. 'Danes' work'; Danish, *Dannevirke*), an ancient wall of about from 30 to 40 feet high and of an equal thickness extending along the southern frontier of Schleswig for nearly 10 miles, from the North Sea to the Baltic. It was constructed in the middle of the tenth century and repaired in 1850, but was captured by the Austrians and Prussians in the Schleswig-Holstein war of 1864 and soon after destroyed.

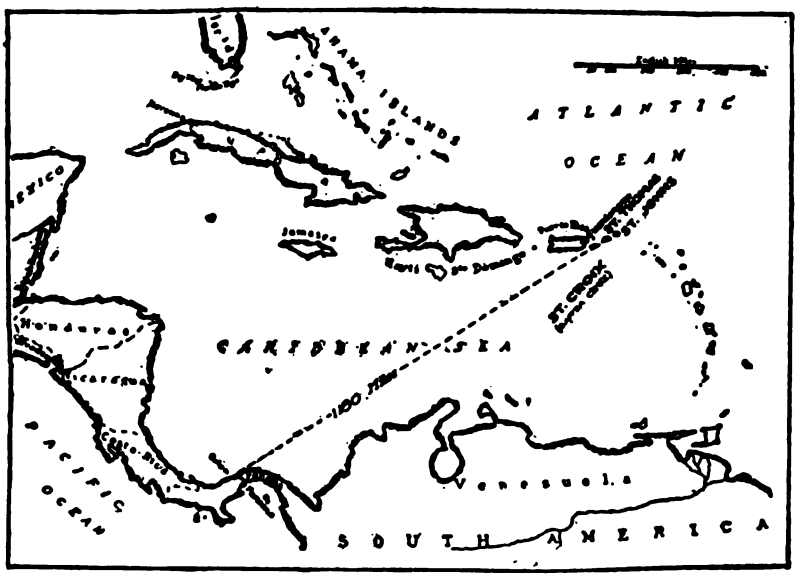
Daniel (dan'yel), the prophet, a contemporary of Ezekiel, was born of a distinguished Hebrew family. In his youth, B.C. 605, he was carried captive to Babylon, and educated in the Babylonish court for the service of King Nebuchadnezzar. Thrown into a lions' den for conscientiously refusing to obey the king, he was miraculously preserved, and finally made prime-minister in the court of the Persian king Darius. He ranks with what are called the 'greater prophets.' The book of the Old Testament which bears his name is divided into a historical and a prophetic part. Modern criticism generally regards it as written during the oppression of the Jews under Antiochus, about 170 B.C. It is partly in Chaldee.

Daniel, SAMUEL, an English historian and poet, contemporary with Shakespere, was born in 1562. Under the patronage of the Pembroke family he received several court appointments, but he commonly lived in the country, employed in literary pursuits. His great poem, *The History of the Civil Wars between the Houses of York and Lancaster,* is written with much rhetorical grace and dignity of style. He wrote also epistles, pastorals, sonnets, and a few tragedies, as well as a clear and useful sketch of English history till the time of Edward III. He died in 1619.

Daniell, JOHN FREDERICK, a distinguished English physicist, born at London in 1790. In 1816 he

commenced the *Quarterly Journal of Science and Art* in concert with Mr. Brande. In 1820 he published an account of a new hygrometer which he had invented. Soon afterwards his valuable works, *Meteorological Essays* and the essay on *Artificial Climate*, appeared. In 1831 he was appointed professor of chemistry in King's College, London, and made further important discoveries, chief among which is his apparatus for maintaining a powerful and continuous current of electricity in galvanic batteries (see following article). For these discoveries he received successively the three medals in the gift of the Royal Society. He was made a D.C.L. of Oxford in 1843, and died in 1845.

Daniell's Battery, an electric cell invented by J. F. Daniell in 1836. In its present form it is a two-fluid cell in which depolarisation is effected by electro-chemical means. The essential parts of the cell are a zinc rod immersed in a solution of dilute sulphuric acid, or zinc sulphate solution, and separated by a porous pot of unglazed earthenware from a copper plate dipping into a solution of copper sulphate. The chemical reaction consists practically in the replacement of copper by zinc in the solution. Though the E. M. F. of the Daniell cell is only 1.08 volts, it is more constant than that of any other cell in common use.



Map Showing the Virgin Islands (formerly Danish West Indies).

Daniels, JOSEPHUS, American editor and public official. He was born in Washington, N. C., in 1862, and received an academic education. At the age of 18 he engaged in newspaper work. He was a member of the Democratic National Executive Committee from North Carolina for many years, and a member of the Democratic National Committee which carried on the campaign for the nomination and election of President Wilson, in whose cabinet he became Secretary of the Navy.

Danish West Indies, the former title of three islands in the Virgin Island group of the West Indies, now part of the outlying possessions of the United States, which purchased them in 1917 for $25,000,000. This country had more than once sought to acquire them, and at one time could have done so for $5,000,000. What gives them their present increased value is the fact that they lie on one of the chief routes of travel between Europe and the Panama Canal, and possess an excellent harbor, that of Charlotte Amalie. The fear was entertained that Germany or some other European power might gain possession of these islands, a possibility likely to prove to the disadvantage of the United States.

These islands are known as Santa Cruz (Sainte Croix), Saint Thomas, and Saint John, their total area being 138 square miles and their combined population 32,786, chiefly divided between the first two named. These people are mostly negroes and the product of the island mainly sugar-cane and rum. Tobacco and cotton are also grown. These islands were discovered by Columbus, and have been successively held by Holland, England, Spain, France and Denmark, their first ownership being that of the United States. Their value, as stated, lies in the port of Charlotte Amalie, which is a coaling and cable station and has facilities for ship repairing. In the hands of the United States it is likely to develop into a port of active business. See *Saint Thomas* and *Charlotte Amalie.*

Danites (dăn'īts), a former secret society of the Mormon Church for militant action against its enemies. It was organized by Joseph Smith at Kirtland, Ohio, in 1836, by a 'covenant' to avenge any further expulsion of the Missouri Mormons by mobs. The name finally chosen by the society was Sons of Dan, turned by outsiders into Danites. It is usually charged with all the deeds of blood laid at the door of the Mormons, including the Mountain Meadows massacre. The Mormons have denied that the society had any existence, or if it had that it was in no way connected with the Mormon Church or was countenanced by it. The name was also given by the Douglas Democrats to the Buchanan Democrats in the Lincoln-Douglas senatorial campaign in Illinois, 1858, as an insinuation that they were Buchanan's tools in upholding the Utah rebellion.

Dankali, or DANA'KIL (the former is the Arabic singular, the latter the plural), the common name of a number of rude tribes that inhabit Africa, east of Abyssinia, between it and the Red Sea. They are of the Mohammedan religion. Number about 70,000.

Dannecker (dan'ek-er), JOHANN HEINRICH, a German sculptor, born in 1758; died in 1841. As a student at the Karlschule he distinguished himself; was appointed court sculptor, and visited Paris and Rome. In 1790 he returned to Würtemberg, and became professor of the fine arts at Stuttgart. His best works are his statue of Christ and his *Ariadne Seated on a Panther.*

Dannemora (da-ne-mō'ra), a village on a lake of the same name, 24 miles N. N. E. of Upsala, in Sweden, celebrated for its iron-mines, the second richest in Sweden, which have been worked uninterruptedly for upwards of three centuries.

D'Annunzio (dăn-nun'dzē-ō), GABRIELE, an Italian poet, novelist, dramatist and soldier (1864-), born at Francavilla. Among his best-known plays are *La Citta Morta, La Gioconda,* and *Francesca da Rimini.* His novels include *Il Fuoco,* and other *Romances of the Pomegranate.* He played a hero's part in the European war. Among his spectacular exploits as an aviator was his bombing of Vienna with leaflets bidding the people rise against their military masters. Dissatisfied with the peace terms he collected an army and occupied the disputed territory of Fiume in 1919.

Dan River. A river rising in the Blue Ridge Mountains, in Patrick County, Virginia, and flowing southeast into North Carolina. It combines with the Staunton River in southern Virginia to form the Roanoke River. It is 180 miles long and drains an area of about 3700 square miles. The river is navigable for light boats and furnishes extensive water power.

Dante, ALIGHIERI (dăn'tā ä-lē-gē-ā'rē), (a contraction of *Durante*) the greatest of Italian poets, was born in Florence about the end of May, 1265, of a family belonging to the lower nobility. Of his early life and education little is definitely known. He is said to have studied in various seats of learning, and it is certain that either at this time or in the course of his wandering life he made himself master of all the knowledge of his time. He seems to have been quite a boy, no more than nine years of age, when he first saw Beatrice Portinari, and the love she awakened in him has been described in that record of his early years, the *Vita Nuova,* as well as in his later great work, the *Divina*

Commedia, in terms which make it hard to distinguish the real personality of Beatrice from some ideal power of beauty and virtue of which she is to Dante the symbol. Their actual lives at least went far enough apart, Beatrice marrying a noble Florentine, Simone Bardi, in 1287, and dying three years afterwards; while the year following Dante married Gemma dei Donati, by whom he had four children. At this time the Guelfic party

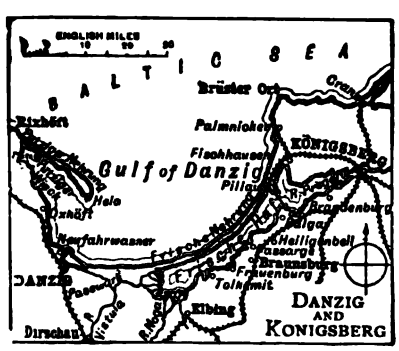
Dante.

in Florence became divided into the rival factions of Bianchi and Neri (Whites and Blacks), the latter being an extreme papal party, while the former leaned towards reconciliation with the Ghibellines. Dante's sympathies were with the Bianchi, and being a prior of the trades and a leading citizen in Florence he went on an embassy to Rome to influence the pope on behalf of the Bianchi. The rival faction of the Neri, however, had got the upper hand in the city, and in the usual fashion of the time were burning the houses of their rivals and slaying them in the open street. In Dante's absence his enemies obtained a decree of banishment against him, coupled with a heavy fine, a sentence which was soon followed by another condemning him to be burned alive for malversation and peculation. From this time the poet became, and to the end of his life remained, an exile; and his history, first lost by the indifference of contemporaries and then hallowed by the legends of later generations, becomes semimythical. He has told us himself how he wandered 'through almost all parts where this language is spoken,' and how hard he felt it 'to climb the stairs and eat the bitter bread of strangers.' During this period he is said to have visited many cities, Arezzo, Bologna, Sienna, etc., and even Paris. In 1314 he found shelter with Can Grande della Scala at Verona, where he remained till 1318. In 1320 we find him staying at Ravenna with his friend Guido da Polenta. In September, 1321, his sufferings and wanderings were ended by death. He was buried at Ravenna, where his bones still lie. His great poem, the *Divina Commedia* ('Divine Comedy'), written in great part, if not altogether, during his exile, is divided into three parts, entitled *Hell*, *Purgatory* and *Paradise*. The poet dreams that he has wandered into a dusky forest, when the shade of Virgil appears and offers to conduct him through hell and purgatory. Further the pagan poet may not go, but Beatrice herself shall lead him through paradise. The journey through hell is first described, and the imaginative power with which the distorted characters of the guilty and the punishments laid upon them are brought before us; the impressive pathos of these short histories—often compressed in Dante's severe style into a couple of lines—of pope and Ghibelline, Italian lord and lady; the passionate depth of characterization, the subtle insight and intense faith, make up a whole which for significance and completeness has perhaps no rival in the work of any one man. From hell the poet, still in the company of Virgil, ascends to purgatory, where the scenes are still mostly of the same kind, though the punishments are only temporary. In the earthly paradise Dante beholds Beatrice in a scene of surpassing magnificence, ascends with her into the celestial paradise, and after roaming over seven spheres reaches the eighth, where he beholds 'the glorious company which surrounds the triumphant Redeemer.' In the ninth Dante feels himself in the presence of the divine essence, and sees the souls of the blessed on thrones in a circle of infinite magnitude. The deity himself, in the tenth, he cannot see for excess of light. There are many notable translations of Dante's great poem. Among English versions we may mention those of Cary, Longfellow and Dean Plumptre, and an excellent prose translation by Dr. John Carlyle. The *Vita Nuova* has been admirably translated by D. G. Rossetti in his *Early Italian Poets*. Dante's other works are: *Il Convito* ('The Banquet'), a series of philosophical commentaries on the author's canzoni: *Il Canzoniere*, a collection of poems; a Latin treatise, *De Monarchia*, a work intended to prove the supremacy of the head of the Holy Roman Empire; a treatise on the Italian language entitled, *De Vulgari Eloquentia*; and an inquiry into the relative altitude of

the water and the land, *De Aqua et Terra*.

Danton (dän-tōn), GEORGE JACQUES, an advocate by profession, and one of the great figures in the French Revolution, born in 1759. His colossal stature, athletic frame, and powerful voice contributed not a little, together with his intellectual gifts and audacity, to win him a prominent position among the revolutionaries. He founded the club of the Cordeliers, was foremost in organizing and conducting the attack on the Tuileries, August 10, 1792, and as a reward for such services was made minister of justice and a member of the provisional executive council. When the advance of the Prussian army spread consternation among the members of the government Danton alone preserved his courage, and in a celebrated speech summoned all Frenchmen capable of bearing arms to march against the enemy. He voted for the capital punishment of all returning aristocrats, but undertook the defense of religious worship, and, along with Robespierre, brought Hébert and the worshipers of the goddess Reason to the scaffold. But the rivalry of the two great leaders had now reached a point when one must succumb, and the crafty Robespierre succeeded in having Danton denounced and thrown into prison, March 31, 1794. Five days afterwards he was condemned by the revolutionary tribunal as an accomplice in a conspiracy for the restoration of monarchy, and executed the same day.

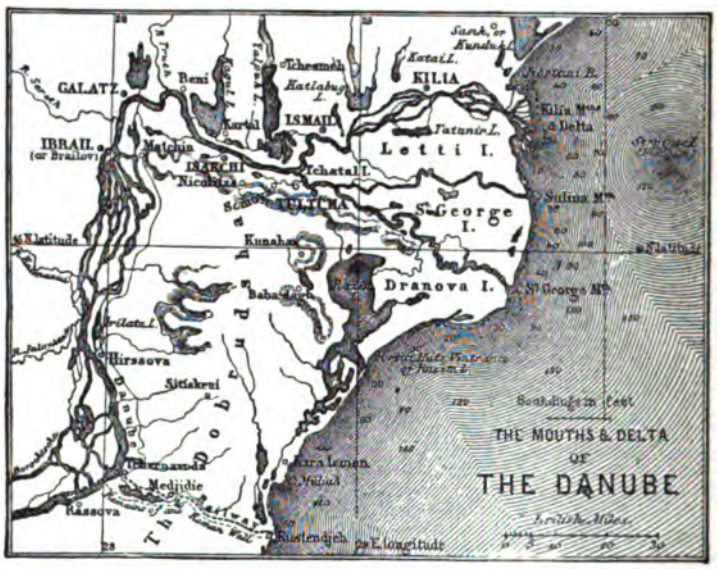
Dantzig or DANZIG (dän'zeh), a free port within the Polish customs frontier, formerly capital of the province of West Prussia, 253 miles N. E. of Berlin, on the left bank of the west arm



of the Vistula, about three miles above its mouth in the Baltic, and intersected by the Mottlau, which here divides into several branches. The more modern parts of the city are regularly and well built, in the other parts the streets are narrow and the houses old and indifferent. Among the principal buildings are the church of St. Mary, begun in 1343, the church of St. Catherine, the Artushof, dating back to the fifteenth century, and many other picturesque edifices. The industries are numerous, including shipbuilding, machinery, brewing, saw mills, ironware, firearms, etc. The prosperity of the town is founded chiefly on its transit trade, particularly in wheat from Poland. Till the disastrous war of 1914-18, which resulted in the severance of Dantzig from German control, it was considered one of the most important seaports in the Prussian monarchy. By the treaty of 1919 it was made a free city, together with the surrounding territory, under the protection of the League of Nations. All property situated within the free city formerly belonging to the German empire was transferred to either Danzig or Poland. Pop. 170,337.

Danube (dan'ūb; anc. *Ister* or *Danubius;* German, *Donau*), a celebrated river of Europe, originates in two small streams rising in the Schwarzwald, or Black Forest, in Baden, and uniting at Donaueschingen. The direct distance from source to mouth of the Danube is about 1000 miles, and its total length, including windings, about 1670 miles. From its source the Danube flows in a northeasterly direction to Ulm, in Würtemberg, where it becomes navigable for vessels of 100 tons; then to Ratishon in Bavaria, where it becomes navigable for steamers. Here it turns in a southeasterly direction, entering Austria at Passau, passing Vienna and Budapest, above which latter town it suddenly turns due south, holding this direction till it is joined by the Drave, after which it runs S. S. E. and enters Servia at Belgrade. Continuing its general course eastward it forms for a long distance the boundary line between Roumania and Bulgaria. At Silistria it once more turns northward, and flowing between Roumania and Bessarabia falls into the Black Sea by three different outlets. In the upper part of its course, through Würtemberg and Bavaria, the Danube flows through some of the most fertile and populous districts of its basin. Its principal affluents here are the Iser and Lech. In Austria it passes through a succession of picturesque scenery till past Vienna, the land on both sides being well peopled and cultivated. The principal affluents are the March, or Morawa, and the Ens. After passing through what is called the Carpathian Gate, at Pressburg, where it enters Hungary, it gives off a number of branches,

forming a labyrinth of islands known as Schütten, but on emerging it flows uninterruptedly southwards through wide plains interspersed with pools, marshes, and sandy wastes. The principal affluents here are the Save, the Drave and the Theiss. Sixty miles before entering Roumania the river passes through a succession of rapids or cataracts. The river was formerly impassable for ships at this point, but the channel was made navigable by extensive engineering works and canals. The last of these cataracts, at Old Orsova, is called the Iron Gate. The lower course of the Danube, in Roumania and Bulgaria, is through a flat and marshy tract, fertile but badly cultivated and thinly peopled. In this part it increases its width from 1400 to 2100 yards, and farther on forms an expanse like a sea, and is studded with islands. Of the three outlets the Sulina Mouth is the deepest, and is usually chosen by ships bound up the river. The Danube is navigable for steamers up to Regensburg (Ratisbon), nearly 1500 miles from its mouth. Some of its tributaries, such as the Save, the Theiss and the Drave, are also navigable, so that the water system of the Danube may be estimated as admitting of about 2500 miles of steam navigation.



Danubian Principalities. See *Roumania.*

Danvers (dan'vers), a town in Essex Co., Massachusetts, 19 miles N. N. E. of Boston. It has manufactures of shoes, leather, electric lamps, bricks, etc., and contains St. John's Preparatory College and Essex County Agricultural School. Pop. (1920) 11,108.

Danville (dan'vil), a city, county seat of Vermilion Co., Illinois, on Vermilion River, 125 miles S. of Chicago. The car shops of the Chicago & Eastern Illinois R. R. are here. There are 25 coal mines in the county. Danville is a great creamery center and the gateway to the Illinois corn belt. It has manufactures of brick, auto parts, glass, etc. Pop. (1910) 27,871; (1920) 33,750.

Danville, a city, county seat of Boyle Co., Kentucky, 36 miles S. S. W. of Lexington. It is the home of Centre College, Kentucky College for Women, and other schools. Pop. 5099.

Danville, a city of Virginia, on the Dan River, 141 miles S. W. of Richmond. It has immense tobacco warehouses, the yearly sales averaging 38,000,000 pounds; also great cotton mills, flour mills, and many other industries. It is the home of Randolph Macon Institute and Roanoke Institute. Pop. (1910) 19,020; (1920) 21,539.

Danville, a borough, county seat of Montour Co., Pennsylvania, on the Susquehanna River, 56 miles N. by

E. of Harrisburg. It has iron and steel works, silk mills, etc. Pop. (1920) 6952.

Danzig. See *Dantzig*.

Daphne (daf'nē), the Greek name for laurel, in Greek mythology a nymph beloved by Apollo. Deaf to the suit of the god, and fleeing from him, she besought Zeus to protect her. Her prayer was heard, and at the moment Apollo was about to encircle her in his arms she was changed into a laurel, a tree thenceforth consecrated to the god.

Daph'ne, a genus of plants, nat. order Thymelaceæ. They are shrubs, inhabiting the greater part of the northern hemisphere, but chiefly the south of Europe and the warmer parts of Asia. The best known is the mezereon (*D. Mezerĕum*), with pale-green leaves and very fragrant flowers. *D. Laurĕola* (spurge laurel) has an irritant bark, and its berries are poisonous.

Daphnia (daf'ni-a), the water-flea, a genus of minute crustaceans belonging to the division of Branchiopoda. The best-known species is the *D. pulex*, or 'branch-horned' water-flea, which is a favorite microscopical object. The head is prolonged into a snout, and is provided with a single, central, compound eye; it is also furnished with antennæ, which act as oars, propelling it through the water by a series of short springs or jerks. These animals are very abundant in many ponds and ditches; and as they assume a red color in summer impart the appearance of blood to the water.

Darab (dă-răb'), a town of Fars, Persia, 140 miles S. E. of Shiraz, situated among groves of dates, oranges and lemons. Pop. about 5000.

Darbhanga (dur-bung'ga), a town of Behar and Orissa, India, 68 miles N. E. of Patna. It is the residence of the maharaja. Pop. 62,628.

D'Arblay, MADAME. See *Burney, Frances*.

Darby (dăr'bi), a borough of Delaware Co., Pennsylvania, 5 miles S.W. of Philadelphia. It has silk and woolen mills and other manufactures. Pop. (1920) 7922.

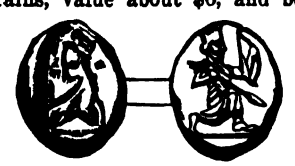
Dardanelles (dar'da-nelz); ancient *Hellespont*), a narrow channel which connects the Sea of Marmora with the Ægean Sea, and at this particular point separates Europe from Asia. It is about 40 miles in length, and varies in breadth from 1 to 4 miles. Its rapid current, often much accelerated by winds, runs southward. On the Asiatic side the country is fine and fertile, rising gradually upwards from the sea to the range of Mount Ida; the European side, formed by the peninsula of Gallipoli, is steep and rugged but densely peopled and highly cultivated. As part of Turkey it was strongly fortified. Early in 1915, during the European War, a British-French naval force tried to reduce the forts but failed. Later in the year a British land force also was defeated (see *Gallipoli*). After the war the forts were destroyed and the Dardanelles became part of the Zone of the Straits, under Allied supervision.

Dardanus (dar'da-nus), in Greek mythology, the progenitor of the Trojans.

Dare, VIRGINIA, the first child born of English parents in the New World. She was born at Roanoke, Va., in 1587; captured as a child by Indians, and never after heard of.

Darfur, or DARFOOR (där'fŏr), a considerable region of Central Africa, forming a large oasis in the S. E. corner of the Great Desert. It may be considered as lying between lat. 11° and 15° N. and long. 21° and 29° E.; on the east it has Kordofan and on the west Wadai, while the regions to the south are occupied by barbarous nations. The inhabitants are Mohammedans and negroes and are semibarbarous. Their occupation is chiefly agriculture, and cattle form their principal wealth. The commerce with Egypt is extensive, and is carried on entirely by the African system of caravans. It exports ivory, ostrich feathers, gum, copper, etc., and receives in exchange sugar, cotton, cloth, hardware, firearms, etc. Pop. est. 750.000.

Daric (dar'ik), an ancient Persian gold coin of Darius, weighing about 129 grains, value about $6, and bearing



Golden Daric, from British Museum.

on one side the figure of an archer. In later times the name has been applied to a silver coin having the figure of an archer.

Darien (dā'ri-en), GULF OF, a gulf of the Caribbean Sea at the north extremity of South America, between the Isthmus of Panama and the mainland.

Darien, ISTHMUS OF, often used as synonymous with the Isthmus of Panama, but more strictly applied to

the neck of land between the Gulf of Darien and the Pacific.

Darien Scheme, a celebrated financial project conceived and set afloat by William Paterson, a Scotsman, towards the close of the seventeenth century. Paterson was a man of bold and original conceptions, and possessed of a wide knowledge of commerce and finance. He was the first projector of the Bank of England, but was disappointed of his just recompense. His next scheme was one of magnificent proportions. He proposed to form an emporium on each side of the Isthmus of Darien or Panama for the trade of the opposite continents. The settlement thus formed would become the entrepôt for an immense exchange between the manufactures of Europe and the produce of South America and Asia. Paterson had designed to limit the benefits of the scheme to Scotland mainly, but had to seek help in London, where the subscriptions soon ran up to £300,000. Alarm was soon excited among the English merchants, especially those connected with the Indies, at the gigantic Scotch scheme, and the English subscriptions were withdrawn. Scotland, indignant at this treatment, subscribed at once and with great enthusiasm £400,000, a full half of all the cash in the kingdom. Little more than the half, however, was paid up. In 1698 five large vessels laden with stores, etc., and with 1200 intending colonists, sailed for the Isthmus of Darien. The settlement was formed in a suitable position, and the colonists fortified a secure and capacious harbor; but nothing else had been rightly calculated. Many of the colonists were of the gentry, totally unacquainted with any of the arts necessary in a new colony; the provisions were either improper for the climate or soon exhausted; the merchandise they had brought was not adapted for the West Indian market. To add to their difficulties the colonists were attacked by the Spaniards and all commerce forbidden with them. For eight months the colony bore up, but at the end of that time the survivors were compelled by disease and famine to abandon their settlement and return to Europe. Two of the ships were lost on the way home, and only about thirty of the colonists, including Paterson, reached Scotland.

Darius (da-rī'us), the name of several Persian kings. (1) DARIUS I, fourth king of Persia, son of Hystaspes, a prince of the royal family of the Achæmenidæ, attained the throne in B.C. 521. His reign was distinguished by many important events. He reduced, after a two years' siege, the revolted city of Babylon, and led an expedition of 700,000 men against the Scythians on the Danube, from which he extricated himself after suffering great losses. To revenge himself against the Athenians who had promoted a revolt of the Ionian cities, he sent an army under Mardonius to invade Greece. But the ships of Mardonius were destroyed by a storm in doubling Mount Athos (492 B.C.), and his army was cut to pieces by the Thracians. Darius, however, fitted out a second expedition of 500,000 men, which was met, on the plains of Marathon by an Athenian army 10,000 strong, under Miltiades, and completely defeated (490 B.C). Darius had determined on a third expedition when he died, B.C. 485.—(2) DARIUS II, surnamed *Nothos*, or the Bastard, by the Greeks, an illegitimate son of Artaxerxes I (*Longimdnus*). He ascended the throne in 423, and died in 404. His son Cyrus is familiar to us through Xenophon's *Anabasis*.—(3) DARIUS III, surnamed *Codomannus*, great grandson of Darius II, was the twelfth and last king of Persia. He ascended the throne B.C. 336, when the kingdom had been weakened by luxury and the tyranny of the satraps under his predecessors, and could not resist the attacks of a powerful invader. Such was Alexander of Macedon; and the army which was sent against him by Darius was totally routed on the banks of the Granicus, in Asia Minor. Darius then hastened with 400,000 soldiers to meet Alexander in the mountainous region of Cilicia, and was a second time totally defeated near the Issus, B.C. 333. Two years afterwards, all proposals for peace having been rejected by Alexander, Darius collected a second army, and meeting the Macedonian forces between Arbela and Gaugamela was again routed and had to seek safety in flight (331 B.C.). Alexander now captured Susa the capital, and Persepolis, and reduced all Persia. Meanwhile Darius was collecting another army at Ecbatana in Media, when a traitorous conspiracy was formed against him by which he lost his life in 330 B.C. Alexander married his daughter Statira.

Darjeeling, or DARJILING (dăr-jēl'-ing), a district of India, in the extreme north of the lieutenant-governorship of Bengal, division of Cooch-Behar; area, 1234 sq. miles. Tea, coffee, cinchona and cotton are cultivated more or less, and the cultivation of the tea-plant and the making of tea is now the staple industry. Pop. 249,117.—DARJEELING, the chief town in the district, is a sanatory station for the British troops,

and though little more than 36 miles from the plains stands at an elevation of 7400 ft. above sea-level, on a ridge with deep valleys on either side, in a bleak but healthy situation. There is a residence of the lieutenant-governor, barracks, a sanatorium, etc. Pop. 16,924, much increased in the hot weather.

Darlaston (dăr'las-tun), a town and parish of England, 17 miles S. by E. of Stafford. It has extensive coal and iron mines. Pop. 17,107.

Darley (dar'li), FELIX O. CARR, artist, born at Philadelphia, Pennsylvania, in 1822; died in 1888. He early showed talent in drawing, and won reputation by his drawings for Irving's *Legend of Sleepy Hollow* and *Rip Van Wrinkle*, and his illustrations for the novels of Judd, Dickens, Cooper and Simms. In 1868, after residing for some years in Europe, he published *Sketches Abroad with Pen and Pencil*.

Darling (darl'ing; from a governor of N. South Wales), a name of several applications in Australia. The *Darling River*, a river rising in the N. E. of New South Wales, flows in a south-westerly direction till it joins the Murray. —*Darling District* is a pastoral district about 50,000 sq. miles in extent, in the S. W. of New South Wales, and watered by the Darling and the Murray.—The *Darling Downs* consists of a rich table-land west of Brisbane in Queensland. It is well watered, and measures about 6000 sq. miles. The *Darling Range* is a range of granite mountains in Western Australia, running in a northerly direction parallel with the coast from Point D'Entrecasteaux for 250 miles.

Darling, GRACE, a celebrated English heroine, was born in 1815, in the Longstone Lighthouse (Farne Islands, coast of Northumberland), of which her father was keeper. In 1838 the steamer *Forfarshire*, with forty-one passengers on board besides her crew, became disabled off the Farne Islands during a storm, and was thrown on a rock where she broke in two, part of the crew and passengers left clinging to the wreck. Next morning William Darling descried them from Longstone, about a mile distant, but he shrank from attempting to reach the wreck through a boiling sea in a boat. His daughter Grace, however, implored him to make the attempt and let her accompany him. At last he consented, and father and daughter each taking an oar, they reached the wreck and succeeded in rescuing nine sufferers. The news of the heroic deed soon spread, and the brave girl received testimonials from all quarters. A purse of £700 was publicly subscribed and presented to her. Four years afterwards she died of consumption, in 1842.

Darlington (dăr'ling-tun), a municipal and parliamentary borough of England, 17½ miles south of Durham; well built, chiefly of brick. The woolen manufacture is carried on to a considerable extent, and there are large ironworks and establishments manufacturing steel, locomotive engines, iron bridges, etc. Pop. (1911) 55,633.

Darlingtonia (dăr-ling-tō'ni-a), a remarkable genus of American pitcher-plants, nat. order Sarraceniaceæ. A single species is known from California. The leaves are long and trumpet-shaped, with a wing rising from one side of the mouth.

Darmstadt (dărm'stăt), a town of Germany, capital of the Grand-duchy of Hesse, in a sandy plain, sloping to the Rhine, 15 m. S. of Frankfort. It consists of an old and a new town. The former, which is the business part of the town, is very poorly built; the houses are old, and the streets narrow and gloomy. The new town is laid out with great regularity, and has handsome squares and houses. Among the remarkable buildings are the old palace (with a library of 500,000 volumes and 4000 MSS., a picture-gallery, and a rich museum of natural history), the Roman Catholic Church, and the Rathhaus, or town-hall, built in 1580. Darmstadt has some iron-foundries, breweries, etc., but depends more upon the residence of the court than upon either trade or manufactures. Pop. (1910) 86,529.

Darmstadt, or HESSE-DARMSTADT. See *Hesse*.

Darnel (dar'nel), the popular name of *Lolium temulentum*, a species of poisonous grass. It appears to be the *infeliæ lolium* of Virgil, and the tares of Scripture. Its properties are said to be narcotic and stupefying, but recent researches have cast some doubt on its reported deleterious qualities. It is met with in cornfields, and is now naturalized in N. America.

Darnétal (dăr-nā-tăl), a town of France, dep. of Seine-Inférieure, 2½ miles east of Rouen. There are extensive woolen factories and spinning-mills. Pop. 6739.

Darnley (darn'li). HENRY STUART, LORD, son of the Earl of Lennox and Lady Margaret Douglas, a niece of Henry VIII, and by her first marriage queen of James IV, born in 1541. In 1565 he was married to Mary, Queen of Scots. It was an unfortunate match, and ere long gave rise first to coolness,

then to open quarrel, and finally to deadly hate, which the murder of Rizzio, to which Darnley was a party, only increased. Mary affected, however, to be reconciled to him, but could not long conceal her contempt for the handsome imbecile. After the birth of a son, subsequently James VI, Darnley was seized at Glasgow with smallpox, from which he had barely recovered when Mary visited him, and had him conveyed to an isolated house called Kirk of Field, close to the Edinburgh city walls. This dwelling, which belonged to a retainer of Bothwell's, the rapidly rising favorite, was blown into the air with gunpowder (February 10, 1567). The dead bodies of the king and his page were found in a field at a distance of 80 yards from the house, quite free from any mark which such an explosion would cause. Strong circumstantial evidence points to Bothwell as the murderer, and, some think, to Mary as an accomplice in the crime.

Darrang (dur'rung), a district of British India, in Assam Province, forming a portion of the upper valley of the Brahmaputra; area, 3418 sq. miles; pop. 340,000. Virgin forests cover a large portion of the region. Rice is the chief grain crop. Darrang came under British control in 1826.

Darters (dar'ters), or SNAKE-BIRDS, a genus (*Plotus*) of web-footed birds of the pelican tribe, found near the eastern coasts of the tropical parts of America, and on the western coast of tropical Africa, as well as in Australia. The birds perch on trees by the sides of lakes, lagoons and rivers, and after hovering over the water suddenly dart at their finny prey with unerring aim (hence the name). From the serpent-like form of their head and neck, the head being scarcely thicker than the neck, they are called snake-birds.

Dartford (dart'ford), a town of England, county of Kent, on the Darent, 15 miles southeast of London. On the river are numerous paper, corn, and oil mills, a large foundry, and an extensive gunpowder manufactory, etc. Dartford was the first place in Britain where a paper-mill was erected. Wat Tyler was a native of this place, and the insurrection known by his name broke out at Dartford. Pop. (1911) 23,609.

Dartmoor (dart'mör), an extensive upland tract in Devonshire, England. There are a number of rugged granite hills (called *tors*), including Yes Tor, 2050 feet. Dartmoor prison, built in 1809 for French prisoners, is now a convict prison. Here occurred the Dartmoor Massacre, in April, 1815, in which a number of Americans, confined during the war of 1812, were fired upon, 7 being killed and 60 wounded.

Dartmouth (dart'muth), a town and seaport of Devonshire, England, on the Dart River, near its mouth. It has shipyards, breweries, paint works, etc., and a large shipping trade. Pop. 7005.

Dartmouth, a town of Nova Scotia, on Halifax Harbor, opposite Halifax, with which there is ferry service. Industries include oil and sugar refineries, cordage works, spice, chocolate and soap factories; lumber and rolling mills, boiler works, foundries, etc. It has hydro-electric power. Pop. 8000.

Dartmouth, a town of Bristol Co., Massachusetts, on the Paskamansett River, 5 miles S. of New Bedford, in a poultry and dairy district. Pop. 6493.

Dartmouth College, an institution founded at Lebanon, Connecticut, in 1754 and removed to Hanover, New Hampshire, in 1769. Aided by Lord Dartmouth, an English nobleman, it was given his name. In 1816 the New Hampshire legislature changed its name to Dartmouth University, but this was opposed by the trustees and a memorable lawsuit followed, the case being carried to the United States Supreme Court. Daniel Webster was one of the counsel for the trustees, whose case was won and the university organization dissolved. The college has remained a conservative institution, and had, in 1919, 125 instructors and 1127 students, with an endowment of nearly $3,000,000.

Daru, PIERRE ANTOINE NOEL MATTHIEU BRUNO, COUNT, a French statesman and author, born at Montpellier in 1767; died in 1829. He favored the revolution, but was imprisoned during the reign of terror, when he translated the odes and epistles of Horace into French verse. Napoleon discovered his abilities and rewarded him by various official appointments of trust. In the campaigns against Austria and Prussia (1806-09) he served with ability as a diplomatist and financier. He became chief minister of state in 1811, and was called to the chamber of peers in 1818. In later life he devoted himself exclusively to letters. His chief works are his *History of the Venetian Republic, Life of Sully, History of Bretagne,* etc.

Darwen (dar'wen), or OVER DARWEN, a municipal borough of Lancashire, England, 3½ miles south of Blackburn. Until about the middle of the last century Over Darwen was an insignificant village; now it is a populous and thriving town. The staple manufacture

is cotton; other manufactures are paper, iron castings, earthenware, etc. Pop. (1911) 40,344.

Darwin (dar'win), CHARLES ROBERT, an English naturalist, born at Shrewsbury in 1809; died at Down, near Beckenham, Kent, in 1882; was the son of Dr. Robert Darwin and grandson of Dr. Erasmus Darwin. He was educated at Shrewsbury School, and at the universities of Edinburgh and Cambridge. He early devoted himself to the study of natural history, and in 1831 he was appointed naturalist to the surveying voyage of H.M.S. *Beagle*, returning

Charles Darwin

home five years later with rich stores of knowledge, part of which he soon gave to the public in various works. In 1839 he married his cousin Emma Wedgwood, and henceforth spent the life of a quiet country gentleman, engrossed in scientific pursuits — experimenting, observing, recording, reflecting and generalizing. In 1839 he published his *Journal of Researches during a Voyage round the World;* in 1842 *Structure and Distribution of Coral Reefs;* in 1844 *Geological Observations on Volcanic Islands*, etc.; in 1846 *Geological Observations in South America;* in 1851 and 1854 his *Monograph of the Cirrhipedia*, and soon after the *Fossil Lepadridæ and Balænidæ of Great Britain*. In 1859 his name attained its great celebrity by the publication of *The Origin of Species by Means of Natural Selection*. This work, scouted and derided though it was at first in certain quarters, may be said to have worked nothing less than a revolution in biological science. In it for the first time was given a full and satisfactory exposition of the theory of evolution as applied to plants and animals, the origin of species being explained on the hypothesis of natural selection. The rest of his works are largely based on the material he had accumulated for the elaboration of this great theory. The principal are a treatise on the *Fertilization of Orchids* (1862); *Domesticated Animals and Cultivated Plants, or The Principle of Variation, etc., under Domestication* (1867); *Descent of Man and Variation in Relation to Sex* (1871); *The Expression of the Emotions in Man and Animals* (1872); *Movements and Habits of Climbing Plants* (2d. ed., 1875); *Insectivorous Plants* (1875); *Cross and Self Fertilization* (1876); *The Power of Movement in Plants* (1880); *The Formation of Vegetable Mold* (1881), the last containing a vast amount of information in regard to the common earthworm. Mr. Darwin was buried in Westminster Abbey.

Darwin, ERASMUS, an English physician and poet, was born in 1731; died 1802. His works include *Zoonomia, or the Laws of Organic Life; Phytologia, or the Philosophy of Agriculture and Gardening.* Charles Darwin was his grandson.

Darwinism (dar'win-izm), the views, especially regarding the origin and development of animals and plants, expressed in detail and advocated with much earnestness in the works of Charles Darwin. See *Evolution, Natural Selection*, etc.

Dasheen (da-sheen), a root vegetable of the genus *Colocasia*, of the family Araceæ, grown extensively in the West Indies and recently introduced into the Southern States. It is closely allied to the taro, or tara (*q. v.*), one of the important food plants in most of the warm regions of the world, and developed to a high degree in Hawaii. The dasheen is very similar to the potato in its food characteristics. It is adapted for cultivation in rich, moist, well-drained soils, and matures in October and November. It requires at least seven months to reach full maturity.

Dass, PETTER, Norwegian poet, of Scottish extraction, born in 1647; died in 1708. He is known as the 'father of Norwegian poetry,' and his principal poem, *The Trumpet of Northland*, is one of the favorite national poems.

Dasyure (das'i-yûr), the brush-tailed opossum, a genus of plantigrade marsupials found in Australia and

Tasmania, and so named in contrast to the opossums of the New World (*Didelphys*), which have naked tails somewhat like rats. The ursine dasyure (*Dasyūrus ursinus*) of Tasmania is about the size of a badger, but of a sturdier form, of a dull black color, carnivorous, and of so savage a temper as to have gained for itself the alternative name of *Diabōlus ursinus*, or Tasmanian devil. Formerly it was most destructive to flocks and poultry yards, but is now in the inhabited districts nearly extirpated. The various species of the genus have much the same nature and habits as the European polecat.

Dataria (da-tā'ri-a), the papal office of the chancery at Rome, from which all bulls are issued.

Date (Latin, *datum*, given), that addition to a writing which specifies the year, month and day when, and usually the place where, it was given or executed; also the time when any event happened, when anything was transacted, or when anything is to be done.

Date, the fruit of the date-palm or the tree itself, the *Phœnix dactylifĕra*. The fruit is used extensively as an article of food by the natives of Northern Africa and of some countries of Asia. It consists of an external pericarp, separable into three portions, and covering a seed which is hard and horny in consequence of the nature of the albumen in which the embryo plant is buried. Next to the cocoanut tree the date is unquestionably the most interesting and useful of the palm tribe. Its stem shoots up to the height of 50 or 60 feet without branch or division, and of nearly the same thickness throughout its length. From the summit it throws out a magnificent crown of large feather-shaped leaves, and a number of spadices, each of which in the female plant bears a bunch of from 180 to 200 dates, each bunch weighing from 20 to 25 lbs. The fruit is eaten fresh or dried. Cakes of dates pounded and kneaded together are the food of the Arabs who traverse the deserts. A liquor resembling wine is made from dates by fermentation. Persia, Palestine, Arabia and the north of Africa are best adapted for the culture of the date-tree, and its fruit is in these countries an important article of food. It is now being introduced into California.

Date-line, INTERNATIONAL, the line at which the date of the day changes on going around the globe. A man who travels around the earth in the direction of the sun's movement gains on the sun and adds a little to the length of each day. On completing the round he will have added twenty-four hours, and thus have gained a full day. It may be Sunday still to him, but it will be Monday to the people he had left. If he goes round opposite to the sun he loses solar time and each day becomes shorter, so that on completing the round he has lost a day's time unconsciously. It is now Monday to him, but it is Sunday to the people he left when starting. To avoid this complication a meridian line has been chosen, on crossing which the traveler changes his reckoning. If it is Tuesday, when he crosses this line going westward he calls it Monday. If going eastward he calls it Wednesday. Thus an awkward complication is avoided. The date-line has been fixed at the 180° meridian from Greenwich. This line has the advantage of traversing water through nearly all its course. Two deviations are made where it crosses island masses. After passing through Bering Strait it slants to the west around the Aleutian Islands, that they may have the same day as the United States, to which they belong, when the Fiji and neighboring groups of islands belonging to Great Britain are reached it bends to the east, so as not to embarrass the local commerce with a change of day.

Date-plum, the name given to several species of *Diospyros*, a genus of trees of the ebony family. The European date-plum is the *D. Lotus*, a low-growing tree, native of the south of Europe. It produces a small fruit, the supposed lotus of the ancients. The American date-plum, or persimmon (*D. Virginiana*), attains a height of 50 or 60 feet; the fruit is nearly round, about an inch in diameter, is very austere, but edible after being frosted. The Chinese date-plum (*D. Kaki*) is cultivated for the sake of its fruit, which is about the size of a small apple, and is made into a preserve.

Datholite (dath'o-lit), the siliceous borate of lime, a mineral of a white color of various shades found in Scotland and on the continent of Europe; also near Lake Superior, where it is used in the manufacture of boric acid.

Datia (dat'i-a), a native state in Bundelkhand, Hindustan, under the Central India Agency. Area, 911 sq. miles; pop. 173,759.—DATIA, the chief town of the state, is situated 125 miles S. E. of Agra, and contains a large number of handsome houses, the residences of the local aristocracy. Pop. 24,071.

Datiscin (da-tis'sin), a substance yielded by the bastard hemp, *Datisca cannabina*, a herbaceous, diœcious perennial, a native of the south of Europe, where it is used as a substitute for Peruvian bark, and for making cordage. Datiscin ($C_{14}H_{22}O_{12}$) is extracted from the leaves, and is used as a yellow dye.

Dative (dā'tiv; L. *dativus*, from *dare*, to give), in grammar, a term applied to the case of nouns which usually follow verbs or other parts of speech that express giving, or some act directed to the object, generally indicated in English by *to* or *for*.

Datura (dā-tū'ra), a genus of plants, order Solanaceæ, with large, trumpet-shaped flowers. There are several species, all having poisonous properties and a disagreeable odor. *D. Stramonium* is the thorn-apple, possessing strong narcotic properties, and sometimes employed as a remedy for neuralgia, convulsions, etc. The dried leaves of *D. Stramonium*, and *D. Tatŭla*, an American species, are smoked as a remedy for asthma.

Thorn-apple (*Datura Stramonium*).—1, Root. 2, Seed-vessel cut across.

Daturine (dā'tū-rin), a poisonous alkaloid found in the thorn-apple (*Datura Stramonium*), its chemical formula being identical with atropine, the alkaloid from deadly nightshade.

Daubenton (dō-bāṇ-tōṇ), or D'AUBENTON, LOUIS JEAN MARIE, a French naturalist and physician, born in 1716; died in 1800. He studied medicine at Paris, and in 1742 began to assist Buffon in the preparation of his great work on natural history, the anatomical articles of which were prepared by him. In 1745 he was appointed curator and demonstrator of the cabinet of natural history in Paris, of which he had charge for nearly fifty years. He became professor of natural history in the College of France in 1778. Among his publications are: *Instructions to Shepherds*, *A Methodical View of Minerals*, etc., and he contributed many scientific articles to the first *Encyclopédie*.

Daubeny (da'be-ni), CHARLES GILES BRIDLE, an English scientist, born in 1795; died in 1867. For many years he was professor of chemistry, botany and rural economy at Oxford, and wrote several esteemed scientific works.

D'Aubigné (dō-ben-yā). See *Merle D'Aubigné*.

Daucus (da'kus), a genus of umbelliferous plants, the most important of which is the carrot.

Daudet (dō-dā), ALPHONSE, a French novelist, born at Nimes, in 1840. He settled in Paris in 1857, and wrote poems, essays, plays, etc., without much success, till he discovered his powers as a novelist, when he speedily rose to the highest rank. His more celebrated works are *Fromont jeune et Risler Aîné* (1874); *Jack* (1876); *Le Nabab* (1877); *Les Rois en Exil* (1879); *Numa Roumestan* (1881); *L'Evangéliste* (1883); *Sapho* (1884); *Les Aventures Prodigieuses de Tartarin de Tarascon* (1874); its sequel, *Tartarin sur les Alpes* (1886); *Trente Ans á Paris* (autobiographical, 1888); and *L'Immortel* (1888). All his most important works have been translated into English. He died in 1897.—His brother, ERNEST (born in 1837), also distinguished himself as a novelist, and was one of the best-known political writers of the French republiçan party.

Daughters of the American Revolution, a society composed of women each of whom is directly descended from an ancestor who 'with unfailing loyalty rendered material aid to the cause of independence as a recognized patriot, as soldier or sailor, or as a civil officer, in one of the several colonies or states.' It was organized in 1890 at Washington, D. C.

Since their organization they have greatly extended their activities in all departments of civil and social life. The membership of the society in 1914 numbered 109,916, with chapters in China, Cuba, Mexico and the Philippines.

Daughters of the Confederacy, a society organized in Nashville, Tennessee, in 1894, and composed of the wives, widows, mothers, sisters or lineal descendants of men who served in the Confederate army or navy or otherwise aided the cause of the Southern Confederacy.

Daughters of the King, an order of women members of the Protestant Episcopal Church, organized in 1885. Its purpose is to bring young women within the influence of the church and to coöperate

with pastors to that end. (It is distinct from the 'King's Daughters.')

Daughters of the Revolution a patrotic society of American women organized in 1891, membership being confined to women lineally descended from 'a military or naval or marine officer, soldier, sailor, or marine,' in the Revolutionary service, or from one who signed the Declaration of Independence, or was a member of the Continental or State congresses or a congressional official assisted in the winning of American independence; with the limitation that these remained loyal to Congress or States throughout the war.

Daulatabad (dou-lat-ä-bäd'), a town of India, in the Nizam's Dominions (Haidarabad), Deccan; 170 miles N. E. of Bombay; the fortress, also known by the name of *Deogiri*, was from remote antiquity the stronghold of the rulers of the Deccan. Pop. 1243.

Daun (doun), LEOPOLD JOSEPH MARIA, COUNT VON, an Austrian general, was born in 1705, and died in 1766. He served in the Turkish war in 1710, as major-general in Italy in 1734, and distinguished himself at the battle of Krozka in 1737, and the capture of Dingelfingen in 1740. In 1748, after serving against the French in the Netherlands, he was made Knight of the Golden Fleece. His skilful passage of the Rhine, and his marriage with the Countess of Fux, a favorite of Maria Theresa, procured for him the post of master-general of the ordnance, and in 1757 that of general field-marshal. That same year he defeated Frederick the Great at Kollin, and soon after took Breslau. In 1758 he again defeated Frederick at Hochkirch; but he was at last thoroughly defeated by Frederick at Torgau in 1759. He afterwards became president of the aulic council.

Dauphin (dą'fin), the title of the eldest son of the king of France prior to the revolution of 1830, said to be derived from the dolphin, the crest of the lords of Dauphiny. The name was assumed towards the middle of the ninth century by the lord of Dauphiny, which province was bequeathed by Humbert II to the king of France in 1349 on condition that the heir of the throne should bear the title of Dauphin of Viennois.

Dauphiny (dą-fin-ē; *Dauphiné*), one of the ancient provinces of France, which comprised the modern departments of the Isère, the Hautes Alpes, and part of that of the Drôme. The capital of the whole was Grenoble.

Dauw (dą'u), or PEECHI (*Equus Burcheli*), a species of zebra which inhabits the plains of Southern Africa, particularly to the north of the Orange River. Its general color is a pale brown, with grayish white on the abdomen and inner parts of the limbs. Its head, neck and body and the upper parts of its limbs are striped like the zebra, but the stripes are not so dark in color. The Dutch colonists call it *Bonte-quagga*.

Davenant (dav'en-ant), SIR WILLIAM, an English poet and dramatist, born at Oxford in 1606; died in 1668. His father kept the Crown Inn, a house at which Shakespere used to stop on his journeys between London and Stratford. He was early introduced into court life through his service with the Duchess of Richmond and Lord Brooke; and having produced several plays and court masques, he succeeded Ben Jonson in the laureateship (1638). During the civil war he fought on the royal side, was made a lieutenant-general, and received the honor of knighthood. On the decline of the royal cause he retired to France; but attempting to sail for Virginia, his ship was captured, and he escaped death through the good offices of John Milton, a kindness he was able to repay after the Restoration. Under Charles II Davenant flourished in the dramatic world. His works consist of dramas, masques, addresses, and the epic *Gondibert*, which was never finished; but he is remembered chiefly by the travesty of Shakespere's *Tempest*, made in conjunction with Dryden. He was buried in Westminster Abbey.

Davenport (dav'en-pōrt), a city, county seat of Scott Co., Iowa, situated at the foot of the upper rapids of the Mississippi, 181 miles west of Chicago, and directly opposite Rich Island, the seat of a United States arsenal. Woolen goods, agricultural implements and machines, pottery, carriages, gas engines, locomotives, machinery, washing machines, pearl buttons, metal wheels, looms, and pressed steel cars, etc., are manufactured. Pop. (1910) 43,028; (1920) 56,727.

Daventry (dav'en-tri), or DAINTREE, a market town of England, in the county of and 11 miles W. by N. of Northampton. Pop. 3517.

David (dā'vid), King of Israel, the youngest son of Jesse, a citizen of Bethlehem, and descended through Boaz from the ancient princes of Judah. The life of David is recorded through the first and second books of *Samuel* and the first book of *Chronicles*. The

book of *Psalms*, a large portion of which has been attributed to him (see *Psalms*), also contains frequent allusions to incidents in his life. He reigned from 1055 B.C. to 1015 B.C. according to the usual chronology, but recent investigations put the dates of David's reign from 30 to 50 years later. Under David the empire of the Israelites rose to the height of its power, and his reign has always been looked on by the Jews as the golden age of their nation's history.

David I, King of Scotland, son of Malcolm Canmore; born about 1080; succeeded his brother Alexander I in 1124; died in 1153. He was the first to introduce feudal institutions and ideas into his native land. He twice invaded England to support his niece Matilda against Stephen, her rival claimant for the English crown, during one of his incursions being defeated at the Battle of the Standard (1138). He died at Carlisle, and was succeeded by his grandson Malcolm. He acquired a considerable reputation for sanctity. While yet Prince of Cumbria he had begun the establishment of the Glasgow bishopric. He adjusted the bishoprics of Dunkeld, Moray, Aberdeen, Ross, Caithness, Brechin, Dunblane and Galloway. Among the religious houses for regulars which date from his reign are Holyrood, Melrose, Jedburgh, Kelso, Dryburgh, Newbattle, etc. His services to the church procured for him the popular title of saint, but the endowments so taxed the royal domains and possessions that James VI bitterly characterized him as 'ane sair sanct for the crown.'

David II, King of Scotland, son of Robert Bruce, born in 1322; succeeded to the throne in 1329; died in 1370. On the death of his father he was acknowledged by the greater part of the nation. Edward Baliol, however, the son of John Baliol, formed a party for the purpose of supporting his pretentions to the crown; he was backed by Edward III of England. Battles were frequent, and at first Baliol was successful; but eventually David succeeded in driving him from Scotland. Still, however, the war was carried on with England with increasng rancor, till at length David was made prisoner at the battle of Neville's Cross (1346). After being detained in captivity for eleven years he was ransomed for 100,000 marks. The remainder of his reign was occupied in disputes with his parliament.

David (dȧ-vēd, or dȧ'vid), FÉLICIEN-CÉSAR, a French musician and composer, born at Cadenet (Vaucluse) in 1810; died in 1876. He entered the Paris Conservatoire in 1830, and became an ardent disciple of St. Simon, Enfantin and other social speculators. In 1832, with a few companions, he went to the East in order to realize his dreams of a perfect life, but returned disappointed in 1835. He then published his *Mélodies Orientales*, and soon after his most successful work, *Le Désert*. Other works are: *Moïse sur le Sinai*, *Christophe Colombe*, *Le Paradis*, *Le Perle du Brésil*, *Herculaneum* and *Lalla Rookh*.

David, JACQUES LOUIS, the founder of the modern French school of painting, born at Paris in 1738; died at Brussels in 1825. He went to Rome in 1774, and passed several years there painting a number of important pictures. A second visit produced the *Horatii*, one of his masterpieces. In 1787 he produced *The Death of Socrates*, in 1788 *Paris and Helen*, and in 1789 *Brutus*. In the revolution he was a violent Jacobin, and wholly devoted to Robespierre. Several of the scenes of the revolution supplied subjects for his brush. What is considered his masterpiece, *The Rape of the Sabines*, was painted in 1799. He was appointed first painter to Napoleon about 1804; and after the second restoration of Louis XVIII he was included in the decree which banished all regicides from France, when he retired to Brussels.

David, PIERRE JEAN, a French sculptor, born at Angers in 1789 (hence commonly called David d'Angers); died in 1856. He went when very young to Paris, became the pupil of J. L. David, and in 1809 a prize obtained from the Academy enabled him to pursue his studies at Rome, where he formed a friendship with Canova. On his return to Paris he laid the foundation of his fame by a colossal statue of the great Condé in marble. He visited Germany twice, in 1828 and 1834, and executed busts of Goethe for Weimar, of Schelling for Munich, of Tieck for Dresden, of Rauch and Humboldt for Berlin. In 1831 he began the magnificent sculptures of the Pantheon, his most important work, which he finished in 1837. He executed a great number of medallions, busts and statues of celebrated persons of all countries, among whom we may mention Walter Scott, Canning, Washington, Lafayette, Gutenberg, Cuvier, Victor Hugo, Béranger, Paganini and Madame de Staël.

David, SAINT, patron of Wales, Archbishop of Caerleon, and afterwards of Menevia, now St. David's, where he died about 601. He was celebrated for his piety, and many legends are told of his miraculous powers. His

writings are no longer extant. His life was written by Ricemarch, bishop of St. David's in the eleventh century.

David's, ST.. a decayed episcopal city of Wales, County Pembroke, near the promontory of St. David's Head, once the metropolitan see of Wales. Within a space of 1200 yards in circuit are the cathedral, chiefly of the twelfth century, with a finely decorated rood-loft, the episcopal palace, the ruins of St. Mary's College, and other ecclesiastical edifices, chiefly ruinous. Pop. of township 5398.

Davidson, GEORGE, astronomer, born at Nottingham, England, in 1825, and brought to the United States in childhood. He was appointed on the United States coast survey in 1845, and had charge of the transit of various expeditions to Japan in 1874, and New Mexico in 1882. He completed the transit factors of many thousands of stars. In 1873 he became professor in the University of California, and president of the California Academy of Sciences in 1874. In 1898 he became professor of geography in the University of California. He was a member of the National Academy of Science. He died in 1911.

Davies (da'vēs), SIR JOHN, an English poet and lawyer, born in 1570; died in 1626. In 1603 he was appointed solicitor-general for Ireland, and soon after attorney-general. He was knighted in 1607, returned to the English Parliament in 1621, and obtained the dignity of lord chief-justice in 1626. He wrote *Orchestra, Hymns to Astrea, Nosce Teipsum,* a metaphysical poem and his best-known work; he is also the author of a work on the political state of Ireland.

Davis, ANDREW JACKSON, clairvoyant, born in Orange county, New York, in 1826. He developed in youth remarkable powers. An uneducated boy, he wrote, under clairvoyant influence, tomes full of philosophical speculations and learned disquisitions. These were published as *Principles of Nature, Her Divine Revelations, The Great Harmonia* (4 vols.), etc. They advocated the doctrines of spiritualism. He practiced for many years as a clairvoyant healer of the sick. He died in 1910.

Davis, CUSHMAN KELLOGG, legislator, born at Henderson, New York, in 1834; died in 1900. He removed to Wisconsin, studied law, and served in the Civil war. He was elected to the Minnesota legislature in 1867, was district attorney of that State 1868-73, and governor 1874-75. Was United States Senator 1877-1900, and served on the Paris Peace Commission of 1898.

Davis (dā'vis), HENRY WINTER, statesman, was born in Annapolis, Maryland, in 1817. As a member of Congress he was a brilliant orator. Although representing a slave State, he was unfaltering in fidelity to the Union and a strenuous advocate of emancipation, and as early as 1865 favored negro suffrage. He died in 1865.

Davis, JEFF (1862-1913), an American lawyer and legislator, born near Richmond. He was appointed attorney-general of Arkansas in 1898, and in 1900 became governor. He had the distinction of being the first governor of Arkansas to be elected three times to that office: in 1900, in 1902 and again in 1904. In January, 1907, he became a United States Senator, and was re-elected, but died at the beginning of his second term.

Davis, JEFFERSON, president of the Confederate States of America during the Civil war; born in Kentucky in 1808. He was trained at West Point Military Academy, and from 1828 to 1835 saw a good deal of service on the frontier. At the latter date he became a cotton planter in the State of Mississippi. He was elected to Congress in 1845, but at the commencement of the Mexican war he left Congress and engaged actively in the contest. He entered the Senate in 1847, and held various posts in the government, upholding the policy of the slave States and the doctrine of slave rights. On the outbreak of the Civil war he was chosen president of the Southern States, continued president throughout the war, and was taken prisoner after the fall of Richmond. After two years' imprisonment in Fortress Monroe, he was set at liberty by the general amnesty of 1868. He afterward wrote a history of the war. He died in 1889 at New Orleans.

Davis, JOHN WILLIAM (1873-), an American lawyer, Congressman and diplomat, born in Clarksburg, W. Va., was graduated from Washington and Lee University in 1892 and admitted to the bar in 1895. He was elected to Congress in 1910 and re-elected in 1912, serving till August, 1913, when he resigned to become United States Solicitor-General. In 1918, during the European war, President Wilson appointed him ambassador to Great Britain. While Solicitor-General he argued a number of important cases in the supreme court, including those involving the constitutionality of the Selective Service Act and the Adamson eight-hour law. The government won both cases.

Davis, or DAVYS, JOHN (1550-1605), an English navigator, born at Sandridge, Devonshire. In 1585-87 he conducted three expeditions for the

discovery of the northwest passage. In the first he coasted round the south of Greenland and sailed across the strait that now bears his name into Cumberland Gulf, and in the third he sailed north through Davis Strait into Baffin Bay. He also accompanied the expedition of Cavendish to the Pacific in 1591-93, and made several voyages to the East Indies.

Davis, RICHARD HARDING, war correspondent, novelist and short-story writer, was born at Philadelphia in 1864, entered newspaper work in 1887 and began his war-correspondent career reporting the Græco-Turkish war of 1887. He served in the Cuban insurrection, the Spanish-American war, the South African wars, the Russo-Japanese war, the Balkan wars, and the first years of the great European war. He was in Belgium when the Germans invaded that country and was captured as a spy by the Teutons, narrowly escaping with his life. Later he went to Salonika and Serbia. He returned from Europe early in 1916 and began work on a new book, *With the French in France and Salonika*, but the terrific strain he had undergone sapped his strength and he died suddenly, April 13, 1916, only a few weeks after his return home. He was the author of *Soldiers of Fortune*, *Gallagher and Other Stories*, *The Bar Sinister*, etc. REBECCA HARDING DAVIS, his mother, was also a writer of magazine stories. She was born at Washington, Pa., 1831; died 1910.

Davis Strait, a narrow sea which separates Greenland from Baffin Land, and unites Baffin Bay with the Atlantic Ocean; lat. 60° to 70° N.

Davits (dă'vits), two projecting arms of wood or iron on the side or stern of a vessel, used for suspending or lowering and hoisting the boats by means of sheave and pulley. They are fixed so as to admit of being shipped and unshipped at pleasure.

Davos (dâ-vōs), an elevated valley (over 5000 feet) of Switzerland, Canton Grisons, containing several villages; a winter resort of persons suffering from chest diseases.

Davout, or DAVOUST (dă-vō), LOUIS NICOLAS, Duke of Auerstädt and Prince of Eckmühl, marshal and peer of France, born in 1770 at Annoux, in Burgundy; died in 1823. He entered the army at the age of seventeen; served with distinction under Dumouriez, and at the passage of the Rhine, in 1797. He went with Bonaparte to Egypt in 1798, and commanded the cavalry of the army of Italy in 1800. He received a marshal's baton in 1804, led the right wing at Austerlitz in 1805, and defeated the Prussians at Auerstädt in 1806. He shared the glory of Eylau, Eckmühl and Wagram; was made Governor of Hamburg; took part in the Russian campaign of 1812, and was wounded at Borodino. During the Hundred Days (1815) he was Napoleon's minister of war, and after Waterloo was appointed by the provisional government general-in-chief of the French armies. In 1819 he was a member of the Chamber of Peers.

Davy (dā'vi), SIR HUMPHRY, a distinguished English chemist, was born at Penzance, in 1778; died at Geneva in 1829. After having received the rudiments of a classical education he was placed with a surgeon and apothecary,

Sir Humphry Davy.

and early developed a taste for scientific experiments. So successful was he in his studies that he was appointed professor of chemistry in the Royal Institution at the age of twenty-four. In 1803 he was chosen a member of the Royal Society. His discoveries with the galvanic battery, his decomposition of the earths and alkalies and ascertaining of their metallic bases, his demonstration of the simple nature of the oxymuriatic acid (to which he gave the name of *chlorine*), etc., obtained him an extensive reputation; and in 1810 he received the prize of the French Institute. In 1814 he was elected a corresponding member of that body. Having been elected professor of chemistry to the Board of Agriculture he delivered lectures on agricultural chemistry during ten successive years. The numerous accidents arising from fire-damp in mines led him to enter upon a series of experiments on the nature of the explosive gas, the re-

sult of which was the invention of his safety-lamp. He was knighted in 1812, and created a baronet in 1818. In 1820 he succeeded Sir J. Banks as president of the Royal Society, and at the time of his death he was a member of most of the scientific societies of Europe. He wrote: *Philosophical Researches, Elements of Agricultural Chemistry, Electro-Chemical Researches, Elements of Chemical Philosophy, Researches on the Oxymuriatic Acid, On Fire-damp,* etc. He also contributed some valuable papers to the *Philosophical Transactions.*

Davy Lamp. See *Safety Lamp.*

Dawes (dąz), CHARLES GATES, an American financier, born at Marietta, O., in 1865. He served in the World War, 1917-19, and was appointed Director of the Budget in 1921.

Dawson (dą'son), CONINGSBY (1883-), an Anglo-American author, born in England, resided in the U. S. for a number of years, served with the Canadian forces in World war. Author of *Khaki Courage, The Little House,* etc.— WILLIAM JAMES (1854-), an Anglo-American clergyman and author, born in England, pastor Highbury Quadrant Church, London, 1892-1906; then pastor First Presbyterian Church, Newark, N. J. Author *Makers of English Poetry and Prose, The Readers Library* (with C. Dawson), etc.

Dawson (dą'son), HENRY, an English landscape painter, born in 1811; died in 1878. In early life he was a worker in a Nottingham lace-factory, but this occupation he gave up for art in 1835. After struggling for some time at Nottingham he removed to Liverpool in 1844, and thence to Croydon in 1850, and in later years resided at Chiswick. It was long before his abilities were fully recognized, and his pictures began to bring high prices only a little before his death. Among the best of them are *Wooden Walls of Old England, London from Greenwich Hill, Houses of Parliament, The Rainbow, Rainbow at Sea* and *The Pool below London Bridge.*

Dawson, SIR JOHN WILLIAM, a Canadian geologist, born at Pictou, Nova Scotia, in 1820; died in 1899. Educated at Pictou and Edinburgh University, he early turned his attention to geology, having published papers on the subject when not much over twenty. He accompanied Sir Charles Lyell when examining the geology of Nova Scotia in 1842. In 1850 he became superintendent of education for Nova Scotia, and in 1855 principal and professor of natural history, in McGill College, Montreal, in which position, as well as in that of vice-chancellor, and latterly principal of the university, his services in the cause of education were very marked. He became a member of the Royal Society (London) in 1862, was knighted in 1885, and was president of the British Association in 1886 during its meeting at Birmingham. His published works include *Acadian Geology, The Story of the Earth and Man, Science and the Bible, The Dawn of Life, The Chain of Life,* etc.

Dawson City, a river port of the Yukon Territory, Canada, on the Yukon River, in the center of the Klondike gold region. It was founded in 1896, and in the early days had a population of over 25,000. River steamers reach it from the mouth of the Yukon River in Bering Sea, and it has water and railway connections with Skagway, Alaska. It is the seat of the government offices. Pop. (1911) 3,013.

Dax (daks), a town and watering place of Southwestern France, dep. Landes, on the left bank of the Adour, 25 miles N. E. of Bayonne. The chief attraction of the place is its thermal springs, which have temperatures varying from 86° to 166° Fahr., were much frequented by the Romans, and are still in great repute for the cure of rheumatic and similar complaints. Pop. (1906) 8585.

Day (dā), either the interval of time during which the sun is continuously above the horizon or the time occupied by the revolution of the earth on its axis, embracing this interval (the period of light) as well as the interval of darkness. The day in the latter sense may be measured in more than one way. If we measure it by the apparent movement of the stars, caused by the rotation of the earth on its axis, we must call day the period between the time when a star is on the meridian and when it again returns to the meridian; this is a *sidereal day.* It is uniformly equal to 23 hours, 56 minutes, 4.098 seconds. But more important than this is the *solar day,* or the interval between two passages of the sun across the meridian of any place. The latter is about 4 minutes longer than the former, owing to the revolution of the earth round the sun, and it is not of uniform length, owing to the varying speed at which the earth moves in its orbit and to the obliquity of the ecliptic. For convenience an average of the solar day is taken, and this gives us the *mean solar* or *civil day* of 24 hours, the difference between which and the actual solar

day at any time is the *equation of time*.

The length of the days and nights at any place varies with the latitude and season of the year, owing to the inclination of the earth's axis. In the first place, the days and nights are equal (twelve hours each) all over the world on the 21st of March and the 21st of September, which dates are called the *vernal* (spring) and *autumnal equinoxes* (Lat. *æquus*, equal; *nox*, night). Again, the days and nights are always of equal length at the equator, which, for this reason, is sometimes called the *equinoctial* line. With these exceptions, we find the difference between the duration of the day and the night varying more and more as we recede from the equator. This will be easily understood from a consideration of the accompanying figure, which represents

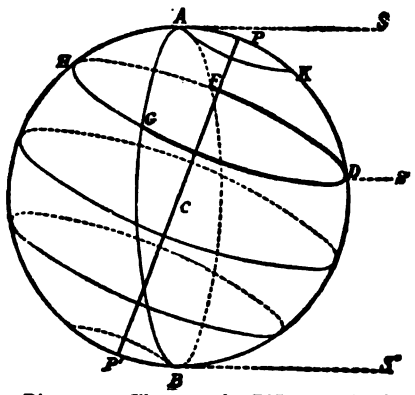


Diagram to Illustrate the Differences in the Length of Day and Night.

the position of the earth at the northern summer solstice. Let S A, S'D, S''B represent the sun's rays, then the vertical circle A F B G will be the *circle of illumination*—that is, the line which separates the illuminated and dark hemispheres of the earth. Consider a place F. As the earth turns round it would describe a circle F D G H, the greater part of which, F D G, is performed in the sunlight, and the smaller part, G H F, in the dark. In other words, the day for the place F would be longer than its night. It will be also seen that for any place within the Arctic circle A K the sun does not set, while in the Anarctic circle the sun never rises so long as the earth is in this position. At the northern winter solstice the reverse of all this is the case—the Arctic circle never comes into the light area, and places within the Anarctic circle never enter into the dark. From this it will be seen that at both poles the year consists of one day of six months' duration, and one night of the same length.

The Babylonians began the day at sunrising; the Jews at sunsetting; the Egyptians and Romans at midnight, as do most modern peoples. The civil day in most countries is divided into two portions of twelve hours each. The abbreviations P. M. and A. M. (the first signifying *post meridiem*, Latin for *afternoon;* the latter *ante meridiem*, *forenoon*) are requisite, in consequence of this division of the day. The Italians in some places reckon the day from sunset to sunset, and enumerate the hours up to twenty-four; the Chinese divide it into twelve parts of two hours each. For astronomical purposes the day is divided into twenty-four hours instead of two parts of twelve hours. Formerly it began at noon, but since January 1, 1885, the day of twenty-four hours has begun at midnight at Greenwich Observatory; and this reckoning is now generally adopted for astronomical purposes elsewhere than at Greenwich. The Greenwich day practically determines the date for all the world. At midday at Greenwich the date (day of the week and month) is everywhere the same, though there are all possible differences in naming the hour of the day. But midday at Greenwich is the only instant at which we ever have the same date all over the world. The meridian of midnight, which is then at 180° E. or W., goes on revolving, gradually bringing a new date to every place to the west of that line, but obviously not bringing that new date to the places immediately to the east of that line till twenty-four hours after. From this it follows that whereas places on the one side of the globe never have a different date except when midnight lies between them, places on the opposite side of the globe, and on different sides of the meridian of 180° E. or W., never have the same date except when midnight lies between them. The actual difference of time between Wellington in New Zealand and Honolulu in the Sandwich Islands is only about 2 hours; yet a person at Wellington may date a letter 9 o'clock A. M. June 26, while another writing at the same instant at Honolulu dates his 11 o'clock A.M. June 25.

Day, THOMAS, an ingenious writer, of a benevolent, independent, but eccentric spirit, was born at London in 1748; killed by a fall from a horse in 1789. His father, who was a collector of the customs, died while he was an infant,

leaving him a considerable fortune. He was educated at the Charter House and at Oxford. In 1765 he was called to the bar. He renounced most of the indulgences of a man of fortune, that he might bestow his superfluities upon those who wanted necessaries; and he also expressed a great contempt for forms and artificial restraint of all kinds. He wrote, in prose and verse, on various subjects, but the *History of Sandford and Merton* is the only work by which his name is perpetuated.

Day, WILLIAM RUFUS, statesman, born at Ravenna, Ohio, in 1849. He was admitted to the bar in 1872, became a judge in Ohio, and of the United States District Court in 1889. He was appointed assistant Secretary of State in 1897, became Secretary of State in April 1898, and resigned to become chairman of the Paris Peace Commission. He has been an associate justice of the United States Supreme Court since 1903.

Daybook, a journal of accounts; a book in which are recorded the debts and credits or accounts of the day. See *Bookkeeping*.

Dayfly, the popular name of those neuropterous insects which belong to the genus *Ephemera*. They are so called because, though they may exist in the larval and pupal state for several years, in their perfect form they exist only from a few hours to a few days, taking no food, but only propagating their species and then dying.

Daylight Saving, a movement to make the most of daylight for working hours by setting the clock ahead one hour in the summer season. It came into force in the United States in April, 1918. See *United States*.

Day-lily, the popular name for a genus of lilies (*Hemerocallis*), natives of temperate Asia and Eastern Europe, two species of which (*H. flava* and *H. fulva*) are grown in gardens. They have long, radical leaves, and a branched, few-flowered scape, with large, handsome blossoms, the segments of which are united into a tube.

Daysman, in English law, an arbitrator or elected judge. This term is antiquated. See Book of Job.

Days of Grace, are days allowed for the payment of a promissory note or bill of exchange after it becomes due.

Dayton, a city of Ohio, capital of Montgomery county, at the confluence of the Mad and Great Miami rivers, 60 miles N. E. of Cincinnati. It has abundant waterpower, is on the line of the Miami and Erie Canal, and is a place of great industrial activity, a tobacco center, a center of railway communication, and in the variety and extent of its manufactures it stands in the front rank of western towns of its size. Its commercial interests are also large. In March, 1913, Dayton was swept by a heavy flood. Pop. (1900) 85,333; (1910) 116,577; (1920) 152,559.

Dayton, a city of Florida, Volusia Co., on Halifax River and Atlantic coast. It is a popular summer and winter resort. Pop. (1920) 5445.

Dayton, a residential city of Campbell Co., Kentucky, on Ohio River, opposite Cincinnati. It has piano and watch manufactures, etc., also tobacco interests. Pop. (1920) 7646.

Deacon (dē'kn), ecclesiastically, a person in the lowest degree of holy orders. The office of deacon was instituted by the apostles, and seven persons were chosen at first to serve at the feasts of Christians, and distribute bread and wine to the communicants, and to minister to the wants of the poor. In the Roman Catholic Church the deacon is the chief assistant at the altar. In the Anglican Church a deacon may perform nearly all the offices of the priesthood. In the Methodist Episcopal Church a deacon ranks next below an elder. In the Presbyterian and other churches deacons are entrusted with the distribution of alms.

Deacon, in Scotland, the president of an incorporated trade, who is the chairman of its meetings and signs its records. Before the passing of the Burgh Reform Act the deacons of the crafts, or incorporated trades, in royal burghs, formed a constituent part of the town-council, and were understood to represent the trades as distinguished from the merchants and guild brethren. The deacon-convenor of the trades in Edinburgh and Glasgow still continues to be a constituent member of the town council.

Deaconess (dē'kn-es), (1) a female deacon in the primitive church; (2) the term for a kind of quasi sister of mercy among certain American and other Protestants.

Dead-eyes, in ships, round, flattish, wooden blocks, encircled by a rope or an iron band, used to extend the shrouds and stays, and for other purposes.

Dead-letter, a letter which lies for a certain period uncalled for at the post-office, or one which cannot be delivered from defect of address, and which is sent to the general post-office to be opened and returned to the writer.—*Dead-letter office*, a department of the

general post-office where dead-letters are examined and disposed of.

Dead-lights, are strong wooden or metal shutters fitted on the outside of the cabin windows of a vessel, so as to close them tightly in bad weather.

Deadly Nightshade. See *Belladonna.*

Dead Men's Fingers. *See Alcyonium.*

Dead-nettle, the common name of the species of plants of the genus *Lamium*, nat. order Labiatæ, from the resemblance of their leaves to those of the nettle, though they have no stinging property. There are several species found in Britain (and now also in N. America), as the white dead-nettle (*L. album*), the red (*L. purpurĕum*), and the yellow (*L. Galeobdŏlon*).

Dead Reckoning (ded rek'on-ing), the calculation of a ship's place at sea without any observation of the heavenly bodies. It is obtained by keeping an account of the distance which the ship has run by the log, and of her course steered by the compass, and by rectifying these data by the usual allowance for drift, leeway, etc., according to the ship's known movements.

Deadwood (ded'wud), a city of South Dakota, capital of Lawrence Co., situated among the Black Hills and a great ore reducing center. It is an important trading and supply point. Pop. 3653.

Dead Sea (Latin, *Lacus Asphaltites;* Arabic, *Bahr Lut,* 'the Sea of Lot'), called in Scripture 'Salt Sea,' 'Sea of the Plains,' and 'East Sea,' a celebrated lake in Asiatic Turkey, near the south extremity of Palestine, south of Syria. The north extremity is 25 miles east of Jerusalem and 10 miles southeast of Jericho; length, north to south, about 46 miles; breadth at the widest part, 9 to 10; average, about 8½ miles. The basin or hollow in which the Dead Sea reposes forms the south termination of the great depression through which the Jordan flows, that river entering it at its north extremity. It receives several other tributaries, but has no outlet. The surface is 1312 feet below the level of the Mediterranean, and 600 feet below Lake Tiberias, from which the Jordan issues. It lies deeply imbedded between lofty cliffs of naked limestone, its shores presenting a scene of indescribable desolation and solitude, encompassed by desert sands and bleak, stony, salt hills. Sulphur and rock-salt, lava and pumice abound along its shores. The water is nauseous, due to magnesium chloride, and so dense that the human body will not sink in it. At about a third of its length from the north end it attains a maximum depth of 1308 feet. The southern portion is a mere lagoon, 12 feet deep in the middle and 3 at the edges. It was long assumed that this lake did not exist before the destruction of Sodom and the other 'cities of the plain,' and that, previously to that time, the present bed of the lake was a fertile plain, in which these cities stood, and was then merely traversed by the Jordan, which, in accordance with this theory, was supposed to hold on its course to the Red Sea. This theory has been shown to be highly improbable. Eminent critics are of opinion that the cities of the plain stood on the lower part of the lake, which received an extension when these cities were destroyed.

Deaf and Dumb, or DEAF-MUTES, persons both deaf and dumb, the dumbness resulting from deafness which has either existed from birth or from a very early period of life. Such persons are unable to speak simply because they have not the guidance of the sense of hearing to enable them to imitate sounds. Among the causes assigned for congenital deafness are consanguineous marriages, hereditary transmission, scrofula, certain local or climatic conditions, ill health of the mother during pregnancy, etc. Acquired or accidental deafness, which occurs at all ages, is frequently due to such diseases as smallpox, measles, typhus, paralysis, hydrocephalus and other cerebral affections, but more particularly to scarlet fever, which is somewhat apt to leave the patient deaf owing to the inflammatory state of the throat extending to the internal ear, and thus causing suppuration and destruction of the extremely delicate parts of the auditory apparatus. In the greater proportion of deaf-mutes no defect is visible, or can be detected by anatomical examination, and no applications yet discovered appear to be useful. The necessity of communication, and the want of words, oblige the deaf-mutes to observe and imitate the actions and expressions which accompany various states of mind and of feeling, to indicate objects by their appearance and use, and persons by some peculiar mark, and to describe their actions by direct imitation. In this way he and his friends are led to form a dialect of that universal language of attitude, gesture and expression which becomes a substitute for words in the hands of the pantomimic actor, and which adds force and clearness to the finest

effusions of the orator; in other words, the natural *sign language*. This language, in its elements, is to be found among all nations, and has ever been the medium of communication between voyagers and the natives of newly discovered countries. It is employed by many savage tribes to supply the paucity of expression in their language and to communicate with other tribes. Among some of the Indians of North America it exists as a highly organized language. Such a means of communication is after all very imperfect, however, and various more perfect systems have been devised to enable deaf-mutes to communicate with one another and with the rest of mankind, and thus to gain such an education as people in general possess. In 1648 John Bulwer published the earliest work in English on the instruction of the deaf and dumb. This was followed by Dalgarno's *Ars Signorum* ('Art of Signs') in 1661, and Dr. W. D. Holder's *Elements of Speech*. Dalgarno, who was a native of Scotland, likewise published, in 1680, *Didascalocophus, or the Deaf and Dumb Man's Tutor*, a work of considerable merit. To Dr. John Wallis, however, Savilian professor of mathematics at Oxford, is generally ascribed the merit of having been the first Englishman who succeeded in imparting instruction to deaf-mutes. In 1743 the practicability of instructing deaf-mutes was first publicly demonstrated in France by Pereira, a Spaniard, before the Academy of Sciences, which gave its testimony to the success of the method. About the same time the Abbé de l'Epée, who devoted his life and fortune to this subject, introduced a system for the instruction of the deaf and dumb, which was taught with great success in the Royal Parisian Institution, and afterwards still further developed by his pupil and successor, the Abbé Sicard. In 1770 a public institution for the education of deaf-mutes was established at Leipzig, through the labors of Samuel Heinicke, the great upholder of the vocal or articulatory system, which is still retained at Vienna and throughout Germany. About twenty years previously Thomas Braidwood had established near Edinburgh in 1760 a deaf and dumb school on the articulating system, which was visited by Dr. Johnson during his tour in Scotland. The first public institution in Great Britain for the gratuitous education of the deaf and dumb was founded at Bermondsey in 1792 by the Rev. Messrs. Townsend and Mason. From this establishment originated the London Asylum in Kent Road, which was opened in 1807. In the United States great advances have been made in the education of deaf-mutes, and a National Deaf-mute College is maintained at Washington by the government. Many states have established institutions for the care and instruction of deaf-mutes.

The two chief methods of conveying instruction to the deaf and dumb are by means of the manual alphabet, and by training them to watch the lips of the teacher during articulation. There are two kinds of manual alphabet: the double-handed alphabet, where the letters are expressed by the disposition of the fingers of both hands; and the single-handed, in which the letters are formed with the fingers of one hand. Particular gestures which are attached to each word as its distinctive sign are largely used, as are also real objects and models, pictures, etc. The method of teaching by articulation, the pupil learning to recognize words, and in time to utter them, by closely watching the motions of the lips and tongue in speech, and by being instructed through diagrams as to the different position of the vocal organs, is now receiving much attention, and has given excellent results, cases being known where persons have conversed with the deaf and dumb and remained ignorant that those to whom they were speaking were afflicted in this way. It is by no means a novel system, but of late it has vastly increased in favor with authorities. A new mode of teaching articulation has recently been brought into notice, consisting in the use of the system of *visible speech* devised by Mr. Melville Bell. The characters of the alphabet on which this system is founded are intended to reveal to the eye the position of the vocal organs in the formation of any sound which the human mouth can utter. It's practical value as a means of instruction with all classes of the deaf and dumb has not as yet been sufficiently tested.

Deafness, the partial or total inability to hear. This is a symptom of most affections of the ear. It may be due simply to an accumulation of wax. If it comes on suddenly without pain in a healthy person this is probably the cause. When it comes on with a cold in the head it is the result of a cold or catarrh, and is likely to pass off in a few days. Attended by pain, ringing in the ears, etc., some degree of inflammation is likely present. The most intractable form of deafness comes on very gradually and painlessly, and is connected with disease of the middle ear. If a skilled ear surgeon were consulted in

time much might probably be done to stay its progress. Deafness due to the disease of the nerve of hearing is usually very intense, comes on suddenly or advances very rapidly, and is not easily reached by treatment. As to other causes of complete deafness see *Deaf and Dumb*.

Deák (dā-āk'), FERENCZ, a Hungarian statesman, born of a noble Magyar family, in 1803; died in 1876. He was elected to the National Diet in 1832, and became the leader of the liberal party. At the revolution of 1848 he became minister of justice, but retired when Kossuth obtained power. On the defeat of the patriots in 1849 he retired from public life, and did not return till the Franco-Austrian war gave him an opportunity of serving his country. He is regarded as the master-spirit of the movement by which the ancient independence of his country was restored in 1867. Though the leader of the liberal party, he constantly refused office, but no change in the ministry was made without his consent.

Deal (dēl), a seaport and watering place of England, County Kent, between the North and South Foreland, 72 miles E. by S. of London. Walmer Castle, Sandown Castle and Deal Castle are in the vicinity of the town. Boat-building and sail-making are carried on. There is a pier, but no proper harbor; the well-known Downs afford excellent anchorage. Pop. (1911) 11,297.

Deal, the division of a piece of timber made by sawing; a board or plank. The name deal is chiefly applied to boards of fir above 7 inches in width and of various lengths exceeding 6 feet. If 7 inches or less wide they are called battens, and when under 6 feet long they are called deal-ends. The usual thickness is 3 inches, and width 9 inches. The standard size, to which other sizes may be reduced, is 1½ inches thick, 11 inches broad, and 12 feet long. *Whole deal* is deal which is 1½ inches thick; *slit deal*, half that thickness. Deals are exported from Prussia, Sweden, Norway, Russia and British North America.

Deal-fish, the *Trachyptĕrus Arctĭcus*, so called from its excessively compressed body, a denizen of the northern ocean and an occasional visitor to the coasts of Iceland, Norway and Britain; measures from 4 to 8 feet in length; is of a silvery color with minute scales, and has the dorsal fin extended along the whole length of the back. It is also known by the Scandinavian name Vaagmaer.

Dean (dēn; from L. *decānus*, from *decem*, ten), an ecclesiastical dignitary, said to have been so called because he presided over ten canons or prebendaries; but more probably because each diocese was divided into deaneries, each comprising ten parishes or churches, and with a dean presiding over each. In England, in respect of their differences of offices, deans are of several kinds. *Deans of chapters* are governors over the canons in cathedral and collegiate churches. The *dean and chapter* are the bishop's council to aid him with their advice in affairs of religion, and they may advise, likewise, in the temporal concerns of his see. *Rural deans* were originally beneficed clergymen appointed by the bishop to exercise a certain jurisdiction in districts of his diocese remote from his personal superintendence, but their functions have for many years become almost obsolete. *Dean of the chapel royal*, in Scotland, is a title bestowed on six clergymen of the Church of Scotland, who receive from the crown a portion of the revenues which formerly belonged to the chapel royal in Scotland, and which are now in the gift of the crown.

Dean Forest, England, county of Gloucester. It formerly comprised the greater part of the county west of the Severn, but is now reduced to about 22,000 acres, nearly one-half of which is enclosed, and was formerly appropriated for the growth of navy timber, but is now mainly covered with coppices. This district is crown property, and the inhabitants (chiefly coal and iron miners) enjoy many ancient privileges. In 1911 it contained a pop. of 54,261.

Dean of Faculty. —(1) In some universities, as that of London and those of Scotland, the chief or head of a faculty (as of arts, law, or medicine); in the United States, a registrar or secretary of the faculty in a department of a college, as in a medical, theological, or scientific department. (2) The president for the time being of an incorporation of barristers or law practitioners; specifically, the president of the incorporation of advocates in Edinburgh.

Dean of Guild, in Scotland, originally that magistrate of a royal burgh who was head of the merchant company or guildry; now the magistrate whose proper duty is to take care that all buildings within the burgh are sufficient, that they are erected agreeably to law, and that they do not encroach either on private or public prop-

erty. He may order insufficient buildings to be taken down.

Death (deth), is that state of a being, animal or vegetable, but more particularly of an animal, in which there is a total and permanent cessation of all the vital functions, when the organs have not only ceased to act, but have lost the susceptibility of renewed action. Death takes place either from the natural decay of the organism, as in old age, or from derangements or lesions of the vital organs caused by disease or injury. The signs of actual death in a human being are the cessation of breathing and of the beating of the heart; insensibility of the eye to light, pallor of the body, complete muscular relaxation, succeeded by a statue-like stiffness or rigidity which lasts from one to nine days; and decomposition, which begins to take place after the rigidity has yielded, beginning first in the lower portion of the body and gradually extending to the chest and face. What becomes of the mind or thinking principle, in man or animal, after death, is a matter of philosophical conjecture or religious faith.

Death, Civil, of old the entire loss or forfeiture of civil rights; the separation of a man from civil society, or from the enjoyment of civil rights, as by banishment, abjuration of the realm, entering into a monastery, etc.

Death, Dance of, a grotesque allegorical representation in which the figure of Death, generally in the form of a skeleton, is represented interrupting people of every condition and in all situations, and carrying them away; so called from the mocking activity usually displayed by the figure of Death as he leads away his victims. It was frequently drawn by artists of the middle ages for cemeteries and cloisters. These representations were common in Germany, and also in France, where they received the name of *Danse Macabre*, the derivation of which has been much disputed. The series attributed to Hans Holbein, the younger, was first published at Lyons in 41 plates, increased in a subsequent edition by 12 additional plates. A remarkable *Dance of Death* was painted, in fresco, on the walls of the churchyard in the suburb of St. John at Basel, which was injured, in early times, by being washed over, and is now entirely destroyed. This piece has been ascribed to Holbein; but it has long since been proved that it existed sixty years before his birth.

Death-rate, the proportion of deaths among the inhabitants of a town, country, etc. It is usually calculated at so many per thousand per annum.

Death's-head Moth, the largest species of lepidopterous insect found in Europe, and systematically known by the name of *Acherontia atropos*. The markings upon the back of the thorax very closely resemble a skull, or death's-head; hence the English name. It measures from 4 to 5 inches in expanse. It emits peculiar sounds, somewhat resembling the speaking of a mouse, but how these are produced naturalists have not been able satisfactorily to explain. It attacks beehives, pillages the honey, and disperses the inhabitants. It is regarded by the vulgar as the forerunner of death or other calamity.

Death Valley, a narrow valley in California, between the Panamint and Funeral Mountains, its central part covered with salt and 300 or 400 feet below sea level. It is considered the dryest and hottest place in the United States, its temperature having reached the extreme of 122° F. It is so called because a party of emigrants perished there in 1849.

Death-watch, the popular name of the *Anobium tessela-tum*, a coleopterous insect that inhabits the wood-work of houses. In calling to one another they make a peculiar ticking sound, which superstition has interpreted as a forerunner of death.

Death-Watch Beetle (*A. tessellatum*).—1, Natural size. 2, Magnified. 3, Head as seen from underneath.

Débacle (dā'ba-kl), a sudden breaking up of ice in a river; used by geologists for any sudden outbreak of water, hurling before it and dispersing stones and other débris.

Debenture (de-ben'tūr), a deed-poll (declaratory deed) given by a public company in acknowledgment of borrowed money. It gives the holder the first claim for dividends, while the capital sum lent is usually assured on the security of the whole undertaking. With the deed, coupons or warrants for the payment of interest at specified dates are generally issued. Custom-house certificates of drawback are also termed debentures.

Deborah (deb'o-rà), a Hebrew seer or prophetess who lived in the time of the Judges, by the aid of Barak delivered the northern tribes from the

oppression of Jabin, and secured a peace of forty years' duration. The triumphal ode (Judges, v) attributed to her is a remarkable specimen of Hebrew poetry.

De Bow (de bō), JAMES D. B., born at Charleston, South Carolina, in 1820; died in 1867. An able statistician, he founded in 1845 *De Bow's Commercial Review*, and in 1847 became professor of political economy and statistics in the University of Louisiana. In 1855 he published *Industrial Resources of the South and West.*

Debreczin (de-bret'sin), a town of Hungary, on the edge of the great central plain, 113 miles E. of Budapest. Its houses are mostly of a single story; the streets broad and unpaved. Among the principal edifices are the Protestant church and college. Manufactures are coarse woolens, leather, soap, tobacco-pipes, casks, etc. A large trade is done in cattle. Pop. (1910) 92,729.

Debs, EUGENE VICTOR, an American Socialist (1855-), born at Terre Haute, Ind. A locomotive fireman, he rose to be president of the Railway Union. He was arrested in connection with the Great Northern Railway strike in 1894 and imprisoned for six months for contempt of court. On his release he took up the cause of Socialism, becoming a candidate of the Socialist party for the Presidency in 1904, 1908, and 1912. He was sentenced to ten years imprisonment in 1918 for obstructing recruiting and enlistment.

Debussy (dā-bū-sē'), CLAUDE ACHILLE, a French composer, born at St. Germain-en-Laye, August 22, 1862. He is the leader of the extremists of the young French school in finding new methods of expression, and has introduced a new system of color into music. His scale basis is of six whole notes, used frequently incomplete. His works, which are very numerous, include the operatic masterpiece, *Pelléas et Mélisande*, *La Mer*, *Ariettes oubliées*, *Images*, incidental music to *King Lear*, *the Petite Suite*, *Trois Nocturnes*, etc. Died 1918.

Decade (dek'ād; Latin, *decas, decadis;* Greek *dekas*, from *deka*, ten) is sometimes used for the number ten, or for an aggregate of ten. The term is now usually applied to an aggregate of ten years.

Decagon (dek'a-gon), in geometry, a figure of ten sides.

Decaisnea (de-kā'nē-a), a genus of plants, nat. order Lardizabalaceæ, growing on the Himalayas 7000 feet above the sea. It sends up erect stalks like walking-sticks, bearing leaves 2 feet long. Its fruit, which resembles a short cucumber, contains a sweet, yellow, edible pulp.

Decalogue (dek'a-log; Gr. *deka*, ten, and *logos*, a word), the ten commandments, which, according to Exod., XX, and Deut., v, were given by God to Moses on two tables of stone. The Jews call them the *ten words*. Jews and Christians have divided the ten commandments differently; and in some Catholic catechisms the second commandment has been united with the first, and the tenth has been divided into two.

Decameron. See *Boccaccio.*

Decamps (dē-kăn), ALEXANDRE GABRIEL, an eminent French painter, was born at Paris in 1803; killed while hunting at Fontainebleau in 1860. His paintings include pictures of Oriental scenery and character, historical pictures, genre pictures and animals.

De Candolle (dē kăn-dol), AUGUSTIN PYRAME, one of the most illustrious of modern botanists, whose natural system of classification, with some modifications, is the one still generally used, was born at Geneva in 1778; died there in 1841. He took up the study of medicine at Geneva and Paris, where he attracted the notice of Cuvier and Lamarck, whom he aided in various scientific researches. After returning to his native city he again visited Paris, and took his medical degree, selecting as the subject of his thesis the medical properties of plants. In 1804 he lectured in the College of France on vegetable physiology; and the following year published an outline of his course, under the title of *Principes de Botanique*, prefixed to the third edition of Lamarck's *Flore Française.* In this outline he laid the basis of the system of classification which he afterwards developed in larger and more celebrated works. In 1808 he obtained the chair of botany in the faculty of medicine at the University of Montpellier. In 1816 he returned to Geneva, where a chair of natural history was expressly created for him, and where he continued for many years to extend the boundaries of his favorite science by his lectures and publications. His chief works are: *L'Histoire des Plantes Grasses*, *Regni Vegetabilis systema Naturale* (incomplete), *Théorie Elémentaire de Botanique*, *Organographie Végétale*, *Physiologie Végétale* and *Prodromus Systematis Naturalis*, the latter completed by his son ALPHONSE (1806-93), also an eminent botanist and member of the French Institute.

Decandria (de-kan'dri-a), in the Linnæan system of bot

any, the tenth class of plants. The flowers have ten stamens, and one, two, three, or more pistils. It includes the pink, Lychnis, Saxifrage, etc.

Decapitation (de-kap-i-tā'shun), beheading, capital punishment inflicted by the sword, ax, or guillotine.

Decapoda (de-kap'o-da; Gr. *deka*, ten, and *pous*, *podos*, a foot).—(1) The highest order of crustaceans, so called from having five pairs of legs. They are subdivided into Brachyura, the short-tailed decapods or crabs; Macrura, or long tailed, including the shrimp, lobster, prawn, crayfish, etc.; and Anomura, of which the hermit-crab is an example. (2) One of the two divisions of the dibranchiate cuttle-fishes (the other being the Octopoda). They have two arms longer than the other eight, and bear the suctorial discs only at the extremities.

Decapolis (de-kap'o-lis), a district of ancient Palestine containing ten cities, partly on the east, partly on the west of the Jordan.

Decatur (de-kā'ter), a city, county seat of Macon Co., Illinois, midway between Chicago and St. Louis, on the Wabash, the Illinois Central, and other railroads. It has over 80 manufacturing plants, with a manufactured output of over $36,000,000. It leads in the manufacture of corn products, brass plumbing goods and soda fountains. Seat of James Milliken University. Pop. (1910) 31,140; (1920) 43,818.

Decatur, a town, county seat of De Kalb Co., Georgia, 6 miles N. E. of Atlanta, in a truck-farming, lumber and dairy section. Seat of Agnes Scott College and Donald Frazer High School. Pop. (1920) 6150.

Decatur, STEPHEN, an able American naval commander, born in 1779; killed in a duel in 1820. Among the chief exploits of his life were the burning of the frigate *Philadelphia* under the guns of the forts of Tripoli; the capture of the British frigate *Macedonian* in 1812; his attempted escape from the blockade of New York harbor, 1813-14; and his chastisement of the Algerines, 1815. He was renowned for his cool intrepidity and great resolution.

Decazeville (dē-käz-vēl), a town of France, dep. Aveyron, with coal and iron mines. Pop. 15,000.

Deccan (dek'an), the section of India lying south of the Vindhya mountains.

Decebalus (de-seb'a-lus), the name of several Dacian kings, or perhaps a general title of honor borne by them. One of them distinguished himself by his opposition to the Roman arms during the reigns of Domitian and Trajan. He entered the province of Mœsia, defeated and killed Appius Sabinus, the Roman governor, and captured many important towns and fortresses. Domitian agreed to pay him a yearly tribute, which was continued by Nerva, but refused by Trajan, who subdued Dacia, and Decebalus, to escape falling into the hands of the victors, committed suicide.

December (de-sem'bėr), the twelfth month of our year, from the Latin *decem*, ten, because in the Roman year instituted by Romulus it constituted the tenth month, the year beginning with March. In December the sun enters the tropic of Capricorn, and passes the winter solstice.

Decemvirs (de-sem'vėrs), the ten magistrates who had absolute authority in ancient Rome (B.C. 451-449). See *Appius Claudius.*

Deciduous (de-sid'ū-us), is a term applied in botany to various organs of plants, particularly leaves, to indicate their annual fall. A tree of which the leaves fall annually is called a deciduous tree, and the same term is applied to the leaves themselves. The term is also applied in zoology to parts which fall off at a certain stage of an animal's existence, as the hair, horns and teeth of certain animals.

Decimal (des'i-mal) FRACTIONS. See *Fraction.*

Decimal System, is the name given to any system of weights, measures, or money in which the unit is always multiplied by 10 or some power of 10 to give a higher denomination, and divided by 10 or a power of 10 for a lower denomination. This system has been rigidly carried out in France in all its weights and measures, and the principle obtains in the coinage of Belgium, Italy, Spain, Portugal, the United States, and some other countries. To express the higher denominations, that is to say, the unit multiplied by 10, 100, 1000, 10,000, the French, in their metric system, make use of the prefixes *déca, hecto, kilo, myria,* derived from the Greek; thus, the *mètre* being the unit of length, *décamètre* is 10 mètres, *hectomètre* 100 mètres, *kilomètre* 1000 mètres. To express lower denominations, that is, tenths, hundredths, etc., the Latin prefixes *déci, centi, milli* are used in the same way; thus a *centilitre* is the hundredth part of a *litre, décilitre* the tenth part of a *litre.* The basis of the whole system is the linear measure, the unit of

which is the mètre, supposed to be the ten-millionth part of a quadrant of the earth's meridian (39.37 inches). The square of 10 mètres, or square décamètre, called an *are*, is the unit of surface measure. The cube of the tenth part of the mètre, or cubic décimètre, called a *litre*, is the unit of liquid capacity. The cube of the mètre, called a *stère*, is the unit of solid measure. The weight of a cubic centimètre of distilled water at 39.2° Fahr. (4° Centigrade), called a *gramme*, is the unit of weight. The unit of money is the *franc*, which is divided into *décimes* and *centimes*.

Decimation (de-si-mā'shun), the selection of the tenth man of a corps of soldiers by lot for punishment, practiced by the Romans. Sometimes every tenth man was executed; sometimes only one man of each company, the tenth in order. The term is frequently used in a loose way for the destruction of a great but indefinite proportion of people, as of an army or inhabitants of a country.

Decius (dē-shē-us), C. MESSIUS QUINTUS TRAJANUS, a Roman emperor, who reigned from A. D. 249 to A. D. 251. He persecuted the Christians, and perished with his army in a battle near Abricium against the Goths.

Deck (dek), a horizontal platform or floor extending from side to side of a ship, and formed of planking supported by the beams. In ships of large size there are several decks one over the other. The *quarter-deck* is that above the upper deck, reaching forwards from the stern to the gangway.

Decker, THOMAS. See *Dekker, Thomas.*

Declaration (dek-la-rā'shun), an avowal or formal statement; especially a simple affirmation substituted in lieu of an oath, solemn affirmation, or affidavit, which modern law allows in a variety of cases, such as those which relate to the revenues of customs or excise, the post-office, and other departments of administration. Justices of the peace, notaries, etc., are also empowered in various cases to take voluntary declarations in lieu of oaths, solemn affirmations and affidavits.—*Declaration of Independence*, the solemn declaration of the Congress of the United States of America, on July 4, 1776, by which they formally renounced their subjection to the government of Britain.—*Declaration* of Paris, an instrument signed at the Congress of Paris, 1856, and subsequently accepted by the chief powers. It declared (1) privateering to be abolished; (2) a neutral flag covers enemy's goods, with the exception of contraband of war; (3) neutral goods, except contraband of war, are not liable to capture under an enemy's flag; and (4) blockades, in order to be binding, must be effective.—*Declaration of War*, the formal notice of hostilities.—*Declaration of London*, an instrument agreed upon, but not ratified, by ten maritime powers, codifying the principles of naval warfare.

Declaration of Independence.

A famous state paper issued by the American Continental Congress on July 4th, 1776. It was drawn up by Thomas Jefferson, as member of a committee appointed for the purpose, and declared that the united colonies of America were 'Free and Independent States,' giving at length the reasons for this act, which was based on the unjust and oppressive treatment of the colonies by the king and parliament of England.

Declension (de-klen'shun), in grammar, the aggregate of the inflections or changes of form which nouns, pronouns, and adjectives receive in certain languages according to their meaning or relation to other words in a sentence, such variations being comprehended under the three heads of number, gender, and case, the latter being the most numerous. See *Case.*

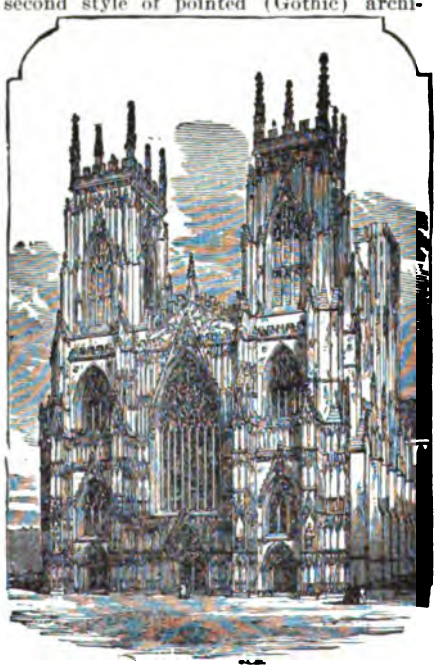
Declination (dek-li-nā'shun), in astronomy, the distance of a heavenly body from the celestial equator (equinoctial), measured on a great circle passing through the pole and also through the body. It is said to north or south according as the body is north or south of the equator. Great circles passing through the poles, and cutting the equator at right angles, are called *circles of declination*. Twenty-four circles of declination, dividing the equator into twenty-four arcs of 15° each, are called hour circles or horary circles.—Declination of the compass or needle, or *magnetic declination*, is the variation of the magnetic needle from the true meridian of a place. This is different at different places, and at the same place at different times. The declination at London was 11° 15′ E. in 1576, 0° in 1652, 19° 30′ W. in 1760, 24° 27′ W., its maximum, in 1815, subsequently changing eastward.

Declinometer (dek-li-nom'e-tėr), an instrument for determining the magnetic declination, and for observing its variations. In magnetic observatories there are permanent instruments of this kind, and they are now commonly made self-registering. Such instruments register the small hourly and

annual variations in declination, and also the variations due to *magnetic storms*.

Decomposition (dē-kom-pō-zish'un), CHEMICAL, is the separation of the constituents of a body from one another. Roughly speaking—for it is a difference of degree rather than of kind—decomposition is either artificial or spontaneous. Artificial decomposition is produced in bodies by the action of heat, light, electricity, or chemical reagents; spontaneous, in bodies which quickly undergo change in ordinary circumstances, unless special precautions are taken to preserve them. The bodies of the mineral, and the definite crystallized principles of the organic, world belong to the first; organized matter, such as animal and vegetable tissues, organic fluids, such as blood, milk, bile, and the complex non-crystallized bodies, albumen, gelatin, emulsin, etc., belong to the second.

Decorated Style (dek'u-rā-ted), in architecture, the second style of pointed (Gothic) architecture, in use in Britain from the end of the thirteenth to the beginning of the fifteenth century, when it passed into the perpendicular. It is distinguished from the Early English, from which it was developed, by the more flowing or wavy lines of its tracery, especially of its windows, by the more graceful combinations of its foliage, by the greater richness of the decorations of the capitals of its columns, and of the moldings of its doorways and niches, finials, etc., and generally by a style of ornamentation more profuse and naturalistic, though perhaps somewhat florid. The most distinctive ornament of the style is the ball-flower, which is usually inserted in a hollow molding. (See *Ball-flower*.)



Decorated Style.—York Cathedral, West Front.

Decoration Day (de-k-o-rā'shun). The beautiful ceremony of decorating the graves of soldiers of the late Civil war in the United States, on the 30th of May of each year, is made possible through the organization of the Grand Army of the Republic, whose posts in every State of the Union keep records of soldiers' graves for the purpose. It is a legal holiday in several of the States, and is observed throughout the North and in parts of the South.

Decoy (de-koi'), a place into which wild fowls are enticed in order to be caught. A decoy pond is kept only in a secluded situation. Several channels or pipes of a curved form, covered with light hooped network, lead from the pond in various directions. The wild fowl are induced to enter the wide mouth of the channel by tamed ducks, also called decoys, trained for the purpose, or by grain scattered on the water. When they have got well into the covered channel they are surprised by the decoy-man and his dog, and driven up into the funnel net at the far end, where they are easily caught. The details differ in different cases, but this is the general principle of the contrivance.

Decree (de-krē), in general, an order, edict, or law made by a superior as a rule to govern inferiors. In law it is a judicial decision or determination of a litigated cause. Formerly, in England, the term was specially used for the judgment of a court of equity, but the word *judgment* is now used in reference to the decisions of all the divisions of the supreme court, as, also, in the United States. The word is still used in Scotland for the final judgment of a court, frequently in the form *decreet*.

Decree Nisi (nē'sē), literally, a 'decree unless,' a legal term for the decree of divorce issued by a court on satisfactory proof being given in support of a petition for dissolution of marriage; it remains imperfect for

at least six months, and is then made absolute, 'unless' sufficient cause is shown why it should not be made so. If within the time appointed good reason can be shown for such a proceeding, the decree nisi will be reversed, or a further inquiry will be ordered.

Decrepitation (d e-k r ep-i-tā'shun), the act of flying asunder with a crackling noise on being heated, or the crackling noise, attended with the flying asunder of their parts, made by several salts and minerals when heated. It is caused by the unequal sudden expansion of their substance by the heat, or by the expansion and volatilization of water held mechanically within them.

Decrescendo (d ā-k r e-s h en'dō), an Italian term in music which denotes the gradual weakening of the sound, or the reverse of *crescendo*.

Decretals (d e-k r ē'tals), a general name for the papal decrees, comprehending the rescripts (answers to inquiries and petitions), decrees (judicial decisions by the *Rota Romana*), mandates (official instructions for ecclesiastical officers, courts, etc.), edicts (papal ordinances in general), and general resolutions of the councils. The decretals form a most important portion of the Roman Catholic canon law, the authoritative collection of them being that made by the orders of Gregory IX and published in 1234.

Dedham, the seat of Norfolk Co., Massachusetts, 9 miles S. W. of Boston. It has manufactures of woolen goods, carpets, machinery, pottery, etc. It was the birthplace of Fisher Ames. Pop. (1920) 10,792.

Dedication (ded-i-kā'shun), the act of consecrating something to a divine being, or to a sacred use, often with religious solemnities. Also an address prefixed to a book, and formerly inscribed to a patron, testifying respect and recommending the work to his protection and favor; now chiefly addressed to friends of the author, or to public characters, simply as a mark of affection or esteem.

Deduction (de-duk'shun), in reasoning, the act or method of drawing inferences, or of deducing conclusions from premises; or that which is drawn from premises. See *Logic*.

Dee (dē), the name of several British rivers. (1) A river of Scotland, partly in Kincardineshire, but chiefly in Aberdeenshire, one of the most finely wooded and one of the best salmon rivers in Britain. The city of Aberdeen stands at its mouth. (2) A river of N. Wales and Cheshire: rises in Lake Bala, Merionethshire; flows to the Irish Sea 20 miles below Chester. (3) A river of Scotland, county of Kirkcudbright: rises in Loch Dee, situated among the western hills, flows S. E. and S., and falls into Kirkcudbright Bay. Each of these streams is between 80 and 90 miles long.

Dee, JOHN, an English mathematician alchemist and astrologer, born in 1527; died in 1608. In early life he successfully devoted much of his time to mathematical, astronomical and chemical studies. In the reign of Mary he was imprisoned on suspicion of practicing the 'black art'; but was in favor with Elizabeth, who is said to have employed him on secret political missions, and paid him a fixed salary. In 1581, along with a man named Kelly, he visited several of the continental courts, pretending to raise spirits. In 1595 he obtained from the queen the wardenship of Manchester College. Here he resided for nine years, and then returned to his old residence at Mortlake, where he died, leaving behind him many works, partly of a scientific character, partly dealing with the occult sciences, invocation of spirits, etc.

Deed (dēd), in law, a writing containing some contract or agreement, and the evidence of its execution, made between parties legally capable of entering into a contract or agreement; particularly an instrument on paper or parchment, conveying real estate to a purchaser or donee. It is either an *indenture* or a *deed-poll;* the former made between two or more persons in different interests, the latter made by a single person, or by two or more persons having similar interests.

Deeg (dēg), a town and fortress in Bhurtpore, Central India, 57 miles northwest of Agra, situated in the midst of marshes, and almost surrounded by water during a great part of the year. At the southwest corner is a lofty rock, on which the citadel stands. It was taken in 1804 by General Fraser, and dismantled after the capture of Bhartpur by Lord Combermere. Pop. 15,828.

Deemster (dēm'ster), an officer formerly attached to the High Court of Justiciary in Scotland, who formally pronounced the doom or sentence of death on condemned criminals. The office was conjoined with that of executioner. The name is now given in the Isle of Man to two judges who act as the chief-justices of the island, the one presiding over the northern, the other over the southern division. They hold

courts weekly at Douglas, Ramsey, and other places.

Deep Sea Exploration. Investigation of the deeper areas of the ocean. The method employed by sounding with apparatus fitted to bring up specimens of organic life and of the sea bottom. American explorations were conducted from 1872 onwards by the U. S. Coast Survey and the Fish Commission, while several European nations have engaged in similar work. The most important of these explorations was that of the English ship *Challenger* (1872-76), which widely traversed the Atlantic and Pacific, and brought up numerous and extraordinary specimens of deep sea animal life. The sea-bottom was also examined and much learned concerning its make-up and conditions. One interesting feature of the results is that many of the animals found are phosphorescent, themselves lighting up their dark abode.

Deer (dēr), a general name for the ungulate or hoofed ruminating animals constituting the family Cervidæ, of which the typical genus is *Cervus*, the stag or red deer. The distinguishing characteristics of the genus are, that the members of it have solid branching horns which they shed every year, and eight cutting teeth in the lower jaw and none in the upper. The horns or antlers always exist on the head of the male, and in the reindeer on that of the female. The forms of the horns are various; sometimes they spread into broad palms which send out sharp snags around their outer edges; sometimes they divide fantastically into branches, some of which project over the forehead, while others are reared upwards in the air; or they may be so reclined backwards that the animal seems almost forced to carry its head in a stiff erect posture. They are used as defensive and offensive weapons, and grow with great rapidity. There are many species of deer, as the red deer or stag, the fallow-deer, the roebuck, the reindeer, the moose, the elk, the axis, rusa, muntjac, wapiti, etc. (See the separate articles.) Deer are pretty widely distributed over the world. though there are none in Australia and few in Africa, where the antelopes (whose horns are permanent) take their place. The reindeer alone has been domesticated.

Deer Forest, an extensive tract of mountainous land set apart for the protection of wild deer, especially red deer, which are used for purposes of sport. In Scotland, to which such forests are chiefly confined, some 2,000,000 acres, distributed over nine or ten counties, are devoted to deer forests. The land is usually, in by far the greater part, of the wildest and least productive kind, but of course may yield large numbers of grouse and other game as well as deer. A great many of the forests are rented by sportsmen from the proprietors, and the rents drawn are considerable, ranging from £1000 to £5000, and even much more, per annum for a single forest. Crofters have often been removed from their holdings in order that the land might be incorporated in some deer forest, and this has been regarded as a great grievance. On the other hand, the lessees of the forests have expended large sums of money in the country, and the rents paid the proprietors have enabled them to do the same.

Deer-grass, the name of several North American plants of the genus *Rhexia*.

Deer-mouse, the common name of the animals belonging to the genus *Meriŏnes*, an American genus of rodent animals allied to the mice and the jerboas of the Old World. The deer-mouse of Canada (*M. Canadensis*) is a pretty little animal of the size of a mouse, with very long hind-legs and a tail, and very short forelegs.

Deer-stalking, an exciting but laborious mode of hunting the red deer, in which, on account of the extreme shyness of the game, their far-sightedness and keen sense of smell they have to be approached by cautious manœuvring before a chance of obtaining a shot occurs. Great patience and tact and a thorough knowledge of the ground are essential to a good stalker, who has to undergo many discomforts in crouching, creeping, wading through bogs, etc. Advance from higher to lower ground is usually made, since the deer are always apt to look to the low ground as the source of danger. 'Deer-driving' towards a point where the shooters are concealed is often practiced, but is looked on as poor sport by the true deer-stalker.

Defamation (def-a-mā'shun), the malicious uttering of slanderous words respecting another which tend to destroy or impair his good name, character, or occupation. To constitute defamation in law the words must be spoken maliciously. Defamation is punishable either by action at common law or by statute.

Default (de-fąlt'), in law, signifies generally any neglect or omission to do something which ought to be done. Its special application is to the non-appearance of a defendant in court

when duly summoned on an appointed day. If he fail to appear judgment may be demanded and given against him by default.

Defendant (de-fen'dant), in law, the party against whom a complaint, demand, or charge is brought; one who is summoned into court and defends, denies, or opposes the demand or charge, and maintains his own right. The term is applied even if the party admits the claim.

Defender of the Faith (*Fidei Defensor*), a title belonging to the King of England, as *Catholicus* to the King of Spain, *Christianissimus* to the King of France, etc. Leo X bestowed the title of *Defender of the Faith* on Henry VIII in 1521, on account of his book against Luther, and the title has been used by the sovereigns of England ever since.

Deffand (def-äṅ), MARIE DE VICHY-CHAMROND, MARQUISE DU, a conspicuous character among the French literati of the eighteenth century, born in 1697; died in 1780. In 1718 she married the Marquis du Deffand, from whom she separated after ten years. During the latter part of her long life she became the center of a literary coterie, which included Choiseul, Boufflers, Montesquieu, Voltaire, D'Alembert, David Hume and Horace Walpole. Her *Letters to Horace Walpole* and *Correspondence with D'Alembert, Montesquieu*, etc., were published.

Defiance (de-fī'ans), a city, county seat of Defiance Co., Ohio, on Maumee River and Wabash & Erie Canal. It has manufactures of machinery, motor trucks, steel products, etc. Seat of Defiance College. Pop. (1920) 8876.

Defilading (dē-fī-lād'ing), that branch of fortification the object of which is to determine (when the intended work would be commanded by eminences within the range of firearms) the directions or heights of the lines of rampart or parapet, so that the interior of the work may not be incommoded by a fire directed to it from such eminences.

Defile (de-fīl'), a narrow passage or way in which troops may march only in a file, or with a narrow front; a long, narrow pass, as between hills, etc.

Definition (def-i-nish'un), a brief and precise description of a thing by its properties; an explanation of the signification of a word or term, or of what a word is understood to express. Logicians distinguish definitions into *nominal* and *real*. A nominal definition explains the meaning of a term by some equivalent word or expression supposed to be better known. A real definition explains the nature of the thing. A real definition is again *accidental*, or a description of the accidents, as causes, properties, effects, etc.; or *essential*, which explains the constituent parts of the essence or nature of the thing. An essential definition is, moreover, *metaphysical* or *logical*, defining 'by the genus and difference,' as it is called; as, for example, 'a plant is an organized being, destitute of sensation,' where the part first of the definition states the genus (organized being), and the latter the difference (destitute of sensation, other organized beings possessing sensation); or *physical*, when it distinguishes the physical parts of the essence; thus, a plant is distinguished by the leaves, stalk, root, etc. A strictly accurate definition can be given of only a few objects. The most simple things are the least capable of definition, from the difficulty of finding terms more simple and intelligible than the one to be defined.

Defoe (dē-fō'), DANIEL, an English writer of great ingenuity and fertility, was born in 1661 in London, where his father, James Foe, carried on the trade of a butcher. In 1685 he joined the insurrection of the Duke of Monmouth, and had the good fortune to escape; after which he made several unsuccessful attempts at business, and at last turned his attention to literature. In 1701 appeared his satire in verse, *The True-born Englishman*, in favor of William III. As a zealous Whig and Dissenter he was frequently in trouble. For publishing *The Shortest Way With the Dissenters* (1702), the drift of which was misunderstood by both Churchmen and Dissenters, he was pilloried and imprisoned in Newgate, obtaining his liberty through the influence of Harley, who employed him in several important missions, particularly in the negotiations for the union with Scotland, of which he wrote the history. While in Newgate, in 1704, he commenced the *Review*, a literary and political periodical which lasted for nine years. In 1705 he wrote a short account of the *Apparition of Mrs. Veal*, a fictitious narrative accompanying a translation of Drelincourt on Death. In 1706 he published his largest poem, entitled *Jure Divino*, a satire on the doctrine of divine right. In 1707 he was in Scotland, which he also visited several times subsequently in connection with political affairs, and as an agent of those in

power. In 1719 appeared the most popular of all his performances: *The Life and Surprising Adventures of Robinson Crusoe*, the favorable reception of which was immediate and universal. The success of Defoe in this performance induced him to write a number of other lives and adventures in character; as *Moll Flanders, Captain Singleton, Roxana, Duncan Campbell, The Memoirs of a Cavalier, Journal of the Plague*, etc. He died in London in 1731.

Deforcement (de-fōrs'ment), in law, the holding of lands or tenements to which another person has a right; a general term including any species of wrong by which he who has a right to the freehold is kept out of possession. In Scots law, it is the resisting of an officer in the execution of law.

De Gerando (dė-zhā-rąn-dō), JOSEPH MARIE, BARON, a French philosopher and statesman, born at Lyons in 1772; died in 1842. After serving in the army for some time he took office as minister of the interior under Lucien Bonaparte, and was afterwards engaged in the organization of Tuscany and the Papal states on their union to France. In 1819 he commenced a course of lectures in the Faculté de Droit, in Paris, on public and administrative law. He was raised to the peerage in 1837. De Gérando has acquired great fame by his philosophical writings. His principal works are *Des Signes et de L'Art de Penser, De la Génération des Connaissances Humaines, Histoire comparée des Systèmes de Philosophie, Du Perfectionnement Moral et de l'Education de Soi-même, De l'Education des Sourds-muets de Naissance*, and *De la Bienfaisance Publique*.

Deggendorf (deg'en-dorf), a town of Bavaria, on the Danube, with manufactures of cloth, etc. Pop. (1906) 7154.

De Gourmont (dė-gōr'mon), REMY, French poet, born in 1858; died in Paris September 28, 1915. He was editor of the *Mercure de France* and a director of the *Révue des Idées*.

Degradation (de-gra-dā'shun), the ecclesiastical censure by which a clergyman is divested of his holy orders. The canon law distinguishes degradation into two sorts; the one summary, by word only; the other solemn, by stripping the person degraded of those ornaments and rights which are the ensigns of his order or degree. The term is also applied to the deprivation of offices not ecclesiastical.

Degree (de-grē'), in geometry or trigonometry, the 360th part of the circumference of any circle, the circumference of every circle being supposed to be divided into 360 equal parts, called degrees. A *degree of latitude* is the 360th part of the earth's circumference north or south of the equator, measured on a great circle at right angles to the equator, and a *degree of longitude* the same part of the surface east or west of any given meridian, measured on a circle parallel to the equator. Degrees are marked by a small ° near the top of the last figure of the number which expresses them; thus 45° is 45 degrees. The degree is subdivided into sixty equal parts called minutes; and the minute is again subdivided into sixty equal parts called seconds. Thus, 45° 12′ 20″ means 45 degrees, 12 minutes and 20 seconds. The magnitude or quantity of angles is estimated in degrees and parts of a degree, because equal angles at the center of a circle are subtended by equal arcs, and equal angles at the centers of different circles are subtended by similar arcs, or arcs containing the same number of degrees and parts of a degree. An angle is said to be so many degrees as are contained in the arc of any circle intercepted between the lines which contain the angle, the angular point being the center of the circle. Thus we say an angle of 90°, or one of 45° 24′. It is also usual to say that a star is elevated so many degrees above the horizon, or declines so many degrees from the equator, or such a town is situated in so many degrees of latitude or longitude. The length of a degree depends upon the radius of the circle of the circumference of which it is a part, the length being greater the greater the length of the radius. Hence the length of a degree of longitude is greatest at the equator, and diminishes continually towards the poles, at which it = 0. Under the equator a degree of longitude contains 60 geographical, and 69.16 statute miles. The degrees of latitude are found to increase in length from the equator to the poles, owing to the figure of the earth. Numerous measurements have been made in order to determine accurately the length of degrees of latitude and longitude at different parts of the earth's surface and thus settle its dimensions and magnitude. When the French determined to establish their system of measures and weights based upon the metre (see *Decimal System*), they settled that this basis was to be the ten-millionth part of the distance from the equator to the pole.

which distance had to be found by accurate measurement. Ten degrees of latitude were accordingly measured, from Dunkirk to Formentera, one of the Balearic islands. Similar measurements having been made in Britain, the length of a total arc of twenty degrees has been found. Many measurements have also been made elsewhere. The term is also applied to the divisions, spaces, or intervals marked on a mathematical, meteorological, or other instrument, as a thermometer or barometer.

Degree, in universities, a mark of distinction conferred on students, members, or distinguished strangers, as a testimony of their proficiency in the arts or sciences, or as a mark of respect, the former known as ordinary, the latter as honorary degrees. The degrees are bachelor, master and doctor, and are conferred in arts, science, medicine, divinity and music. Degrees are conferred on women by London University. Cambridge admits them to the tripos examinations, and Oxford to most of its honor schools, but neither grants at present the stamp of a degree. St. Andrew's University grants the title L.L.A. to women who pass in four subjects; the standard of attainment being the same as that required for the M.A. degree, the books prescribed and the questions set being practically identical. In the United States universities similar degrees are given and women frequently receive them.

Degree, in algebra, a term used in speaking of equations, to express what is the highest power of the unknown quantity. Thus, if the index of that power be 3 or 4 (x^3, y^4), the equation is respectively of the third or fourth degree.

Dehra (dā'ra), a town of Hindustan, capital of Dehra Doon, beautifully situated, with military cantonments, English, Presbyterian and Roman Catholic churches, and an American mission. Pop. 28,095.

Dehra Doon (dā'ra dön), a beautiful and fertile valley in the Meerut division of the Northwestern Provinces, Hindustan, at the S. W. base of the lowest and outermost ridge of the Himalayas. It is bounded on the N. by the Jumna, N. E. by the mountains of Gurwhal, from 7000 to 8000 feet high, S. E. by the Ganges, S. W. by the Sewalik range, 3000 to 3500 feet high. Its length from S. E. to N. W. is about 45 miles; breadth, from 15 to 20 miles. The chief town in the valley is Dehra.

Dei gratia (dē'ī grā'shi-a; 'by the grace of God'), a formula which sovereigns add to their title. The expression is taken from several apostolical expressions in the New Testament.

Deinosauria. See *Dinosauria.*

Deioces (dī'o-sēz), an ancient personage who flourished about seven centuries B.C., rose from a private station to be the founder of the Median Empire. By acting as arbitrator in the disputes which took place in his own vicinity, the fame of his justice induced the Medes to choose him for their king after their revolt from the Assyrians. He built the city of Ecbatâna, in which he resided; after a reign of thirty-five years he left the throne to his son Phraortes.

Deira (de'i-ra), an ancient Anglican kingdom, stretching from the Tees to the Humber, and extending inland to the borders of the British realm of Strathclyde. With Bernicia it formed the Kingdom of Northumbria.

Deism (dē'izm; Lat. *Deus*, God), a philosophical system which, as opposed to *Atheism* (Gr. *a*, not, and *Theos*, God), recognizes a great First Cause; as opposed to *Pantheism* (Gr. *pan*, all, *Theos*), a Supreme Being distinct from nature or the universe; while, as opposed to *Theism*, it looks upon God as wholly apart from the concerns of this world. It thus implies a disbelief in revelation, skepticism as regards the value of miraculous evidence, and an assumption that the light of nature and reason are the only guides in doctrine and practice. It is thus a phase of Rationalism. In the eighteenth there were a series of writers who are spoken of distinctively as the English deists. They include Collins, Toland, Tindal, etc.

Dejanira (dej-a-nī'rà), in Greek mythology, the wife of Hercules or Heracles (which see).

DeKalb (de-kalb'), a city of DeKalb Co., Illinois, 58 miles W. of Chicago. It is the seat of the Northern Illinois Normal School, and manufactures wire, shoes, gloves, implements, pianos, motor trucks, wagons, etc. Pop. 7871.

De Kalb, JOHN, a German soldier, born at Hüttendorf in 1721. An officer in the French army, he came to America with Lafayette in 1777, was appointed a major-general by Congress, and served in Washington's army. In 1780 he was second in command under General Gates in the South and was killed at the battle of Camden. He called himself baron, but was really a peasant's son, without title.

Dekker, or DECKER (dek'er), JEREMIAS DE, a Dutch poet, born in 1609 or 1610; died in 1666. His best-

known poems are: *Lof der Geldzucht*, a satire on avarice; and *Puntdichten*.

Dekker, DECKER, or DECKAR, THOMAS, an English dramatist and miscellaneous writer, born about 1570; died in 1641. He was a voluminous writer, and besides a great number of pamphlets he wrote many plays which give a vivid picture of contemporary life in London.

De Koven, REGINALD, an American composer (1861-1920), born in Middletown, Conn. He wrote many light operas, notably *Robin Hood*, *The Fencing Master*, *Rob Roy*, *The Highwayman*, *Happyland*, *The Student King*, *Rip Van Winkle*, etc.

De la Beche, SIR HENRY. See *Ceche, Sir Henry de la.*

Delaborde (dē-lȧ-bôrd), HENRY FRANÇOIS, COUNT, a French general, born at Dijon in 1764; died in 1833. He distinguished himself in the republican armies; fought through the whole of the Napoleonic wars, and was ennobled in 1807. After the second restoration he was placed on the list of the officers who were to be criminally prosecuted, but in consequence of a technical error the case against him lay over, and he lived retired and unannoyed till his death.

Delacroix (dē-lȧ-krwȧ), FERDINAND VICTOR EUGÈNE, an eminent French painter, born in 1799; died in 1863. He is considered the chief of the modern French romantic school of painters. In 1831 he joined the embassy sent by Louis Philippe to the Emperor of Morocco. To this journey we are indebted for several pictures remarkable for their vivid realization of oriental life as well as their masterly coloring. They are: *The Jewish Marriage*, *Muley Abderrhaman with his Bodyguard*, *Algerian Ladies in their Chamber*, *Moorish Soldiers at Exercise*, and several scenes of common life. He decorated several of the public buildings of Paris, and was admitted into the Institute in 1857. He was an artist of great versatility, strong in coloring, but weak in drawing.

Delagoa Bay (dē-la-gō'a bȧ), in Southeast Africa, a large sheet of water separated from the Indian Ocean by the peninsula and island of Inyack. The bay stretches north and south upwards of 70 miles, with a breadth of from 16 to 20 miles, and forms the southern extremity of the Portuguese settlement of Mozambique. It is available for vessels of large tonnage, though the presence of shoals, banks and flats renders the navigation of the bay somewhat intricate. The port and Portuguese settlement of Lourenço Marques is being constantly developed as a place of trade. A railway runs from the city to Pretoria, 200 miles distant. During the Boer war Lorenço Marques was the only port available for the Boers.

Delambre (dē-lăn-br), JEAN BAPTISTE JOSEPH, a French astronomer and pupil of Lalande, born at Amiens in 1749; died in 1822. His studies were not directed to astronomy until his thirty-sixth year, but he rapidly acquired fame, and produced numerous works of great value. He was engaged with Méchain from 1792 till 1799, in measuring an arc of the meridian from Barcelona to Dunkirk. In 1807 he succeeded Lalande in the Collège de France, and wrote his *Traité d'Astronomie Théorique et Pratique* (three vols. 4to, 1814), *Histoire de l'Astronomie du Moyen Age* (1819), *Hist. de l'Astronomie Moderne* (1821), two vols., and *Hist. de l'Astronomie du 18me Siècle* (two vols.).

Deland (de-land'), MARGARET W., novelist, was born in Pittsburgh, Pennsylvania, in 1857. She wrote *John Ward, Preacher; Story of a Child; Old Chester Tales; The Awakening of Helena Richie; The Old Garden and other poems, etc, An Encore, The Iron Woman, The Voice, Partners, The Hands of Esau, The Rising Tide*

Delaroche (dē-lȧ-rosh), HIPPOLYTE (familiarly styled PAUL), probably the greatest painter of the

Paul Delaroche

French school, born at Paris in 1797; died in 1856. He studied landscape

painting for a short time, but applied himself afterwards to historical painting, and rapidly rose to eminence. His subjects are principally taken from French and English history. Among them may be mentioned: *Joan of Arc interrogated in Prison by Cardinal Beaufort;* the *Death of Queen Elizabeth*, a work greatly admired by French and generally reprobated by English critics; *The Children of Edward IV in the Tower; Cromwell contemplating the Dead Body of Charles I; The Execution of Lady Jane Grey;* and the *Hemicycle*, an immense work painted in oil on the wall of the École des Beaux Arts, Paris. It represents an assemblage of the great painters, sculptors and architects from the days of Giotto to those of Lesueur, and has been admirably engraved by Dupont. His merits consist in correct drawing, appropriate expression, harmonious color, and great distinctness and perspicuity in treatment, rendering the story of his pictures at once intelligible. He held a middle place between the classical and the romantic schools, and was regarded as the leader of the so-called 'eclectic school.'

Delavigne (dē-lȧ-vēn), JEAN FRANÇOIS CASIMIR, a French poet and dramatist, born at Havre in 1793; died in 1843. At the restoration he published a set of elegies, entitled *Les Messéniennes*, which deplored the faded glories of France. He produced in 1819 his tragedy of *Les Vêpres Siciliennes; Les Comédiens* appeared in 1820, and the tragedy of *Le Paria* in 1821. Of his other plays which followed these may be mentioned: *L'Ecole des Vieillards; Marino Faliero;* and the dramas of *Louis XI* —founded on Commines' *Memoirs* and *Quentin Durward*—and *Don Juan d'Autriche*. His hymns *La Parisienne* and *La Varsovienne*, and the ballad *La Toilette de Constance*, are among his more popular poetical pieces. He died a member of the Academy.

Delaware (del'a-wâr), a river which rises in the Catskill Mountains in New York, separates Pennsylvania from New York and New Jersey, and New Jersey from Delaware, and loses itself in Delaware Bay. It has a course of about 400 miles, and is navigable for large vessels to Philadelphia, and for smaller craft to the head of tidewater at Trenton (155 miles).

Delaware, one of the original thirteen United States, and, next to Rhode Island, the smallest state in the Union, named after Lord Delaware, one of the early governors of Virginia. It is bounded north by Pennsylvania, east by the Delaware River and Bay and by the ocean, south and west by Maryland; area, 2050 square miles. It is divided into three counties, Kent, Newcastle and Sussex, and has nearly the form of a right-angled triangle (hence its popular name 'the Diamond State'). In the south and towards the coast the surface is very level, but the north part is rather hilly. An elevated swampy tableland towards the west traverses the State, forming the watershed between the Chesapeake and the Delaware bays. A great part of the soil is fertile, and agriculture is in a flourishing state. Fruit cultivation (peaches, apples, berries) is largely engaged in, and the canning and drying of fruits are important industries. There are also extensive and varied manufactures. A ship canal connects Chesapeake River and Delaware Bay. There are about 300 miles of railway. Wilmington is the chief manufacturing and commercial town. The capital is Dover. Delaware, though slave-holding, remained loyal to the Union at the secession of the Southern States. Pop. (1900) 184,735; (1910) 202,322; (1920) 223,003.

Delaware, a city, county seat of Delaware Co., Ohio, 24 miles N. of Columbus. Seat of Ohio Wesleyan University. It has car shops, mineral springs, and manufactures of furniture, automobile tops, shoes, stoves, bridges, etc. Pop. (1920) 8756.

Delaware Bay, an arm of the Atlantic Ocean between New Jersey and Delaware, 11 miles wide at entrance, between Capes May and Henlopen, 50 miles long. A breakwater near Henlopen provides a safe harbor.

Delaware Indians, a tribe belonging to the Algonquin family, originally living in the Delaware River basin, and called by themselves Lenni Lenape ('true men').

De La Warr, or DELAWARE, THOMAS WEST, LORD (1577-1618), an English administrator in America; first governor of Virginia (1610).

Delcasse (del-ka-sȧ'), THEOPHILE (1852-), a French statesman, notable for the cordial relations he established with Great Britain.

Del Credere (del kred'e-rā), an Italian mercantile phrase, similar in import to the English *guarantee* or the Scotch *warrandice*. It is used among merchants to express the obligation undertaken by a factor, broker, or mercantile agent, when he becomes bound, not only to transact sales or other business for his constituent, but also to guarantee the solvency of the persons with whom he contracts. On

account of this guarantee a higher commission, called a *del credere* commission, is paid to the factor or agent.

Deleb Palm (de-leb'), the *Borassus Æthiŏpum*, a native of the interior and west of Africa, allied to the Palmyra palm. Its leaves and fruits are used by the Africans for the same purposes as those of the Palmyra by the Asiatics, and the tender roots produced by the young plant are extensively used as an article of food.

Delegate (d e l' e-g ā t), a person appointed and sent by another or by others, with powers to transact business as his or their representative. The title was given to members of the First Continental Congress in America, 1774. Representatives to Congress from the United States territories are designated by this term. They have the right of discussion, but have no vote.

Delescluze (d ė-l ā-k l u z), LOUIS CHARLES, a French communist, born in 1809. He adopted a journalistic career and was imprisoned and fined for his socialistic and revolutionary articles, and also sentenced to banishment. He escaped to England, but having returned to France (1853) was kept in prison for some time and then banished to Cayenne. On his return he again got into trouble. After the fall of the empire and the German occupation he became a prominent member of the Commune, and was shot at one of the barricades in 1871.

Delfshaven (delfs'hā-ven), a former town of Holland, on the Maas, 2 miles S. W. of Rotterdam, of which it is now a suburb. It is well protected from inundation by dikes, etc., and has ample accommodation for shipping.

Delft (delf), formerly DELF, a town of Holland, 8 miles N. W. of Rotterdam, intersected in all directions by canals. Among its buildings are the town hall, the Prinsen-hof, the scene of the assassination of William the Silent, now a military barrack; the old Reformed church, containing the monuments of Admiral Tromp, the naturalist Leeuwenhoek, etc.; the new church, containing monuments to William I, Hugo Grotius, and the burial vaults of the present royal family. Delft was formerly the center of the manufacture of the pottery called *delft-ware;* its chief industries now embrace carpets, leather, soap, oil, gin, etc. Pop. 31,582.

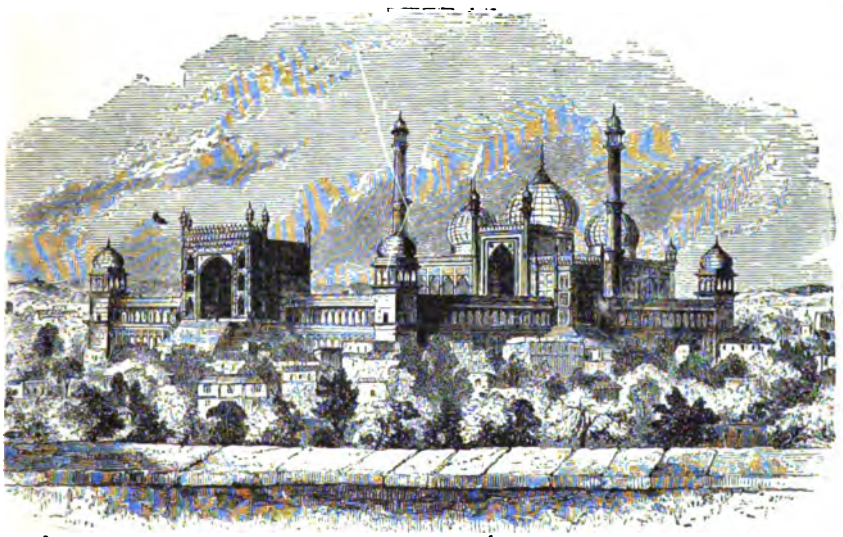
Delft-ware, or DELF, is a kind of pottery covered with an enamel or white glazing which gives it the appearance of porcelain. It was originally manufactured in Delft in the fourteenth century, is now considered coarse, but was among the best of its day.

Delfzyl (delf-zil'), a strongly fortified town and port of North Holland, province Groningen, on the Dollart. Pop. 7395.

Delhi (del'ē), a city of Hindustan, in the Punjab, anciently capital of the Patan and Mogul empires, about 954 miles N. W. Calcutta. At the durbar in 1911, when George V was made Emperor of India, he changed the capital from Calcutta to Delhi. It was at one time the largest city in Hindustan, covering a space of 20 square miles, and having a population of 2,000,000. A vast tract covered with the ruins of palaces, pavilions, baths, gardens, mausoleums, etc., marks the extent of the ancient metropolis. The present city abuts on the right bank of the Jumna, and is surrounded on three sides by a lofty stone wall 5½ miles long, strengthened by the British at the beginning of the last century with a ditch and glacis. The palace or residence of the Great Mogul, built by Shah Jehan, commenced in 1631, and now known as 'the fort,' is situated in the east of the city, and abuts directly on the river. It is surrounded on three sides by an embattled wall of reddish sandstone nearly 60 feet high, with round towers at intervals, and a gateway on the west and south. Since the mutiny in 1857 a great portion has been demolished in order to make room for military barracks. One of the most remarkable objects in the city is the Jamma Musjid or Great Mosque, a magnificent structure in the Byzantine-Arabic style, built by the Emperor Shah Jehan in the seventeenth century. Among modern buildings are the government college, founded in 1792 (abolished as a college); the Residency, and a Protestant church. The East Indian Railway enters the city by a bridge over the Jumna. The S. W. quarter of the town is densely occupied by the shops and dwellings of the native population; the streets are narrow and tortuous, but some of the main thoroughfares of the city are splendid streets, the chief being the Chandni Chauk, or 'Silver Street.' During the mutiny Delhi was seized by the Sepoys, who held possession for four months, during which many atrocities were committed. Pop. (1911) 232,837.

Delille (dė-lēl), JACQUES, a French didactic poet, born in 1738: died in 1813. His translation of Virgil's *Georgics*, published in 1770, with a *Discours Préliminaire* and numerous annotations, established his fame, and obtained him admission to the French

Academy. He became professor of Latin poetry in the College of France, and of belles-lettres at the University of Paris. Though an adherent of the old system, Robespierre spared him on every occasion. At his request Delille wrote the *Dithyrambe sur l'Immortalité de l'Ame*, to be sung on the occasion of the public acknowledgement of the Deity. In 1794 he withdrew from Paris, but returned again in 1801, and was chosen a member of the Institute. He spent two years in London, chiefly employed in translating *Paradise Lost*. His reputation mainly rests on the *Georgics*, and *Les Jardins*,



Great Mosque at Delhi, viewed from Northeast.

a didactic poem. Other works are *L'Homme des Champs*, *La Pitié*, *Les Trois Règnes de la Nature*, *La Conversation*, *L'Enéide de Virgile*, etc.

Deliquescence (d e l-i-q u e s'e n s), a change of form from the solid to the liquid state, by the absorption of moisture from the atmosphere. It occurs in many bodies, such as caustic potash, carbonate of potassium, acetate of potassium, chloride of calcium, chloride of copper, chloride of zinc, et.

Delirium (de-lir'i-um), a temporary disordered state of the mental faculties occurring during illness either of a febrile or of an exhausting nature. It may be the effect of disordered or inflammatory action affecting the brain itself, or it may be sympathetic with active diseases in other parts of the body, as the heart; it may be caused by long-continued and exhausting pain, and by a state of inanition of the nervous system.

Delirium Tremens, an affection of the brain which arises from the inordinate and protracted use of ardent spirits. It is therefore almost peculiar to drunkards. The principal symptoms of this disease, as its name imports are delirium and trembling. The delirium is a constant symptom, but the tremor is not always present, or, if present, is not always perceptible. Frequently the sufferer thinks he sees the most frightful, grotesque, or extraordinary objects, and may thus be put into a state of extreme terror. It is properly a disease of the nervous system. The common treatment is to administer soporifics so as to get the patient to sleep.

Delisle (dē-lēl), GUILLAUME, a French geographer, born in 1675; died in 1726. H published upwards of 130 maps, and reconstructed the system of geography current in Europe in the beginning of the eighteenth century. Louis XV appointed him geographer to the king.—His brother, JOSEPH NICOLAS, born in 1688; died in 1768, was a distinguished astronomer, geographer and mathematician. He visited England, where he formed acquaintance with Newton and Halley.

Delitzsch (d ā'l ē c h), a town of Prussian Saxony, on the

Löbber, 15 miles north of Leipzig, with manufactures of woolens, and several important annual fairs. Pop. 10,479.

Delitzsch, FRANZ, a German theologian, born at Leipzig in 1813. He was a strong supporter of strict orthodox theology; became professor of theology at Rostock in 1846, at Erlangen in 1850, and at Leipzig in 1867. He published many devotional and theological works and several commentaries. Died in 1890.—His son FRIEDRICH, born in 1850, has distinguished himself in Assyriology, and is professor of that subject at Leipzig.

Della Cruscans (del'a krus'kans), a coterie of English poetasters resident for some time in Florence, who printed inferior sentimental poetry and prose in 1785. Coming to England, they communicated the infection to minds of a like stamp, and the newspapers of the day, chiefly the *World* and the *Oracle*, began to give publicity to their lucubrations. They were extinguished by the bitter satire of Gifford's *Baviad and Mæviad*. Mrs. Piozzi, Boswell, Merry, Cobb, Holcroft, Mrs. H. Cowley and Mrs. Robinson were the leaders. They took the name from the Accademia Della Crusca in Florence.

Della Robbia (del'lä rob'i-ä) LUCA, an Italian sculptor, born in 1400 at Florence; died in 1482. He was distinguished for his work both in marble and bronze, and also for his reliefs in terra-cotta coated with enamel, a kind of work named after him. Other members of the family distinguished themselves in the same line, especially ANDREA (1435-1525) nephew and pupil of Luca.

Della Robbia Ware, terra-cotta bas-reliefs thickly enameled with tin-glaze; made at Florence (chiefly 1450-1530); in France (1530-1567); so called from the name of the above artist.

Dellys (del-lēz'), a seaport of Algeria, 49 miles east of Algiers. It consists of a French and an Arab town; the climate is salubrious, and there is a trade in grain, oil and salt. Pop. 14,070.

Delolme (dē-lolm), JEAN LOUIS, a Swiss writer, born at Geneva in 1740; died in 1806. He at first practiced as a lawyer in his native city, but the part which he took in its internal commotions obliged him to repair to England, where he passed some years in great indigence. He became known by his celebrated *Constitution de l'Angleterre*.

De Long, GEORGE WASHINGTON, Arctic explorer, born in New York City in 1844; entered the Naval Academy and became an officer in the U. S. navy. He took part in an expedition to northern Greenland in 1874, and in 1879 sailed as commander of the *Jeannette* on an expedition to explore the Arctic Ocean north of Siberia. The ship was crushed in the ice June 12, 1881, and De Long died of starvation in the delta of the Lena River, October 30. His remains were brought to the United States in 1884.

Deloo (de-lō'; *Cephalolŏphus grimmia*), a small but pretty antelope occurring over a great part of Central and Southern Africa.

Delorme (dē-lorm), MARION, a celebrated French beauty who reigned under Louis XIII. The date of her birth is stated at 1611, 1612 and 1615. Her beauty and wit soon made her house the rendezvous of all that was gallant and brilliant in Paris. She espoused the side of the Frondeurs, and Mazarin was about to have her arrested when her sudden death in 1650 terminated her short career. The legend is current in France that the death and funeral was a mere pretense; that she escaped to England, returned to Paris, and after marrying three husbands lived to the age of 129. Victor Hugo has taken her as the subject of one of his dramas.

Delos (dē'los), an island of great renown among the ancient Greeks, fabled to be the birthplace of Apollo. It was a center of his worship, and the site of a famous oracle. It is the central and smallest island of the Cyclades, in the Ægean Sea, a rugged mass of granite about 12 square miles in extent. At first the island, occupied by the Ionians, had kings of its own, who also held the priestly office. In 477 B.C. it became the common treasury of the Greeks who were leagued against Persia. Subsequently the Athenians removed the inhabitants from it, but they were soon restored. Its festivals were visited by strangers from all parts of Greece, Asia Minor, etc. After the destruction of Corinth (146 B.C.) the rich Corinthians fled thither, and made Delos the seat of a flourishing commerce. The greatest curiosity of the island was the Temple of Apollo. The Persians, when they made war against Greece, forebore attacking the island out of reverence to the patron deities. The Delians showed great skill and taste in making utensils, statues of their gods, figures of heroes, animals, etc., in bronze and silver. Delos, called *Dili* or *Sdili*, is now without permanent inhabitants; a few shepherds from the

neighboring isles pay it summer visits with their flocks. Abundant ruins of its former magnificence yet exist, and excavations resulting in interesting archæological discoveries have recently been made.

Delphi (del'fī), an ancient Greek town, originally called Pytho, the seat of the famous oracle of Apollo, was situated in Phocis, on the southern side of Parnassus, about 8 miles N. of the Corinthian Gulf. It was also one of the meeting places of the Amphictyonic Council, and near it were held the Pythian games. The oracles were delivered by the mouth of a priestess who was seated on a tripod above a subterranean opening, whence she received the vapors ascending from beneath, and with them the inspiration of the Delphian god. The oracular replies were always obscure and ambiguous; yet they served, in earlier times, in the hands of the priests, to regulate and uphold the political, civil and religious relations of Greece. The oracle was celebrated as early as the ninth century B.C., and continued to have importance till long after the Christian era, being at last abolished by the emperor Theodosius. Persons came to consult it from all quarters, bestowing rich gifts in return. The splendid temple thus possessed immense treasures, and the city was adorned with numerous statues and other works of art. It first lost its treasures in 357 B.C., when seized by the Phocians; it was afterwards plundered by Sulla and by Nero.

Delphin Classics, a collection of the Latin classical authors made for the dauphin, son of Louis XIV, edited by Bossuet and Huet.

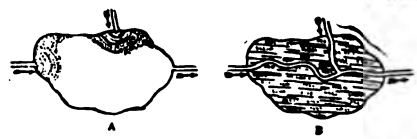
Delphinium (del-fin'i-um), a genus of Ranunculaceæ, comprising the larkspurs, stavesacre, etc. See *Larkspur*.

Delphos (del'fos), a city of Allen Co., Ohio, on Miami Canal, 14 miles N. W. of Lima. It has car shops, planing mills and manufactures of paper, flour, furniture, printing presses, etc. Pop. (1920) 5745.

Del Rio (del rē'ō), a city, county seat of Val Verde Co., Texas, 170 miles W. of San Antonio, 3 miles from the Rio Grande, in a fruit and wool district. Pop. (1920) 10,589.

Delsarte (del-sart), FRANÇOIS A. N. E., a French singer and teacher of elocution, born at Solesmes in 1811; died in 1871. He won a high repute as a teacher of dramatists and a singer of declamatory music, and published works on voice culture and several novels. The system founded by him, known as the Delsarte system, is still popular in the United States, and is applied to the promotion of health by a series of bodily movements held to yield a harmonious development of the body and a true and natural dramatic expression.

Delta (del'ta), the name of the Greek letter Δ, answering to the English D. The island formed by the alluvial deposits between the mouths of the Nile, from its resemblance to this letter, was named Delta by the Greeks; and the same name has since been extended to those alluvial tracts at the mouths of great rivers which, like the Nile, empty themselves into the sea by two or more diverging branches.



Stages in the filling up of a lake. In A two streamlets are represented as pouring their 'deltas' into a lake. In B they have filled the lake up, converting it into a meadow across which they wind on their way down the valley.

Delta Metal, a brass, or alloy of copper and zinc, to which manganese has been added. It is used for parts of machinery and for ornamental work.

Deltoid Muscle (del'toid), a muscle of the shoulder which moves the arm forwards, upwards and backwards.

Deluc (dē-lük), JEAN ANDRÉ, a geologist and meteorologist, was born in 1726 at Geneva; died at Windsor in 1817. In 1773 he went to England; was elected a fellow of the Royal Society of London, and appointed reader to the queen, a situation he held for forty-four years. He made numerous geological excursions in Central Europe and in England, of which he has published accounts. He aimed at defending the Mosaic account of the creation against the criticism whose weapons were furnished by his favorite science. He made many valuable original experiments in meteorology. Among his numerous writings are his *Recherches sur les Modifications de l'Atmosphère* (Geneva, 1772); *Nouvelles Idées sur la Météorologie* (London, 1786); and his *Traité élémentaire de Géologie* (Paris, 1810).

Deluge (del'ūj), the universal inundation which, according to the Mosaic history, took place to punish the great iniquity of mankind. It was pro-

duced, according to Genesis, by a rain of forty days; and covered the earth 15 cubits above the tops of the highest mountains, and killed every living creature except Noah, with his family, and the animals which entered the ark by the command of God. Many other nations mention, in the mythological or prehistoric part of their history, inundations which, in their essential particulars, agree with the Scriptural account of Noah's preservation, each nation localizing the chief events and actors as connected with itself.

Delundung (de-lun'dung; *Prionodon gracilis*), an interesting quadruped inhabiting Java and Malacca, allied to the civets, and probably forming a connecting link between them and the Felidæ, being destitute of scent-pouches. It is of slender form, with a long tail, and is beautifully spotted.

Delvino (del'vi-no), a town of Albania, Turkey, about 44 miles northwest of Janina; it is the seat of a Greek bishop, and has some trade in olive oil. Pop. about 6500.

Demagogue (dem'a-gog), originally simply one who leads or directs the people in political matters; now it usually means one who acquires influence with the populace by pandering to their prejudices or playing on their ignorance.

Demand and Supply, terms used in political economy to express the relations between consumption and production, between the demand of purchasers and the supply of commodities by those who have them to sell. The relations which subsist between the demand for an article and its supply determine its price or exchangeable value. When the demand for a commodity exceeds the supply the price of the commodity is raised, and when the supply exceeds the demand the price falls.

Demavend (de-mä'vend), a volcanic mountain of Persia, and the highest peak of the Elbruz chain, 45 miles south of the Caspian Sea and about 40 miles N. E. of Teheran. Its height is about 19,400 feet, and it bears evidence of having been active during the latest geological (if not within the historical) period.

Dembea (dem'be-a), or TSANA, a lake of Abyssinia, in a province of the same name in the west part of that country. It is of irregular form, about 140 miles in circumference, has an elevation of 6100 feet above the sea, and forms the reservoir of the Blue Nile.

Dembinski (dem-bin'skē), HENRYK, a Polish general, and leader in the Hungarian revolution of 1849: born in 1791; died in 1864. He served under Napoleon during the Russian campaign of 1812; was governor of Warsaw and commander-in-chief of the Polish army during the revolution of 1830; was appointed by Kossuth commander of the Hungarian troops in 1849, and served till Kossuth's resignation compelled him to seek refuge in France, where he remained till his death.

Dementia (de-men'shi-a), a form of insanity in which unconnected and imperfectly defined ideas chase each other rapidly through the mind, the powers of continued attention and reflection being lost. It often implies such general feebleness of the mental faculties as may occur in old age.

Demerara (dem-er-ä'ra), or DEMERARA, a division of British Guiana, which derives its name from the river Demarara or Demerara. It extends about 100 miles along the coast, lying on the east of Essequibo and on the west of Berbice. The soil is very fertile, producing abundant crops of sugar, coffee, cotton, rice, etc. Chief town, Georgetown. Pop. of province, 171,000.—The river, after a course of about 120 miles, flows into the Atlantic.

Demesne (de-mān'), or DOMAIN, in law, a manor-house and the land adjacent or near, which a lord keeps in his own hands or immediate occupation, for the use of his family, as distinguished from his tenemental lands, distributed among his tenants.

Demeter (de-mē'tėr), one of the twelve principal Grecian deities, the great mother-goddess, the nourishing and fertilizing principle of nature. She was the daughter of Cronus and Rhea, and mother of Persephonē (Proserpine). The main feature in the myth of Demeter, and that which forms the fundamental idea of her worship, is the loss and recovery of her daughter, Persephonē. By the Romans she was called *Ceres*. See *Ceres*.

Demetrius (de-met'ri-us), or DMITRI, the name of a series of impostors who usurped supreme authority in Russia, and led to some of its remarkable revolutions. Ivan Vasilievitch, who had put his eldest son to death with his own hand, left the throne in 1584 to another son, Feador, a feeble prince, whom Boris Godunoff entirely supplanted in his authority. Ivan had left another son, Dmitri, by a second marriage; and Boris, fearing that he might one day prove a formidable obstacle to his ambitious projects, caused him to disappear, but no one

exactly knew how. Grishka, or Gregory Otrepieff, a native of Jaroslav and a novice in a monastery, personated Dmitri, went to Lithuania, where he embraced the Roman Catholic religion and married the daughter of Mniszek, palatine or waiwod of Sandomir. In 1604 he entered Russia at the head of a body of Poles, was joined by a number of Russians and Cossacks, and defeated an army sent against him. On the death of Boris he was placed on the throne, but he offended the Russians by his attachment to Polish manners and customs, and still more by a want of respect to the Greek religion and its patriarch, and he was assassinated after reigning about eleven months. A rumor of his being still alive having spread, another impostor quickly appeared to personify him, and the Poles espousing the cause of the second false Dmitri, made it triumphant, until he was assassinated in 1610 by the Tatars whom he had selected as his bodyguards. A state of anarchy ensued and continued for nearly half a century, during which a number of other false Dmitris appeared in different quarters.

Demetrius, surnamed *Poliorcētes* (the besieger of cities), king of ancient Macedonia, son of Antigonus, a successor of Alexander the Great, was born about B.C. 339. Being sent by his father to wrest Greece from Cassander, he appeared before Athens with a fleet, expelled the governor Demetrius Phalereus, and restored to the people their ancient form of government (307 B.C.). He conquered Macedonia (294 B.C.) and reigned seven years, but lost this country, was imprisoned by Seleucus, and died in Syria, 283 B.C.

Demetrius Phalereus (fa-lē′ rŏs), a celebrated Greek orator and statesman, born 345 B.C.; in 317 was made Macedonian governor of Athens, and embellished the city by magnificent edifices. - He fled to Egypt when Athens was taken by Demetrius Poliorcetes (see above), where he is said to have promoted the establishment of the Alexandrian Library and of the museum. Demetrius wrote on several subjects of philospohical and political science, but the work on rhetoric, which has come to us under his name, belongs to a later age.

De Mille, JAMES, a Canadian novelist, born at St. John's, New Brunswick, in 1837; died in 1880. He was professor of classical languages in Acadia College in 1860-65, and of history and rhetoric in Dalhousie College in 1865-80. His books were numerous, including *The Dodge Club, The American Baron, A Comedy of Terrors, The Cryptogram*, etc.

Demi-lune (de′mi-lūn), in fortification, practically the same as a ravelin (which see).

Demi-monde (de′mi-mond), an expression first used by the younger Dumas in a drama of the same name (first performed in 1855), to denote that class of gay female adventurers who are only half-acknowledged in society; popularly disreputable female society; courtezans.

Demi-rilievo (-ri-li-ā′vō), in sculpture, half-relief, or the condition of a figure when it rises from the plane as if it had been cut in two and only one half fixed to the plane.

Demise (de-mīz; literally, 'a laying down'), in law, a grant by lease; it is applied to an estate either in fee-simple, fee-tail, or for a term of life or years. As applied to the crown of England, *demise* signifies its transmission to the next heir on being laid down by the sovereign at death.

Demisemiquaver (dem′i-sem′i-quā′-ver), in music, half a semiquaver, or the thirty-second part of a semibreve.

Demiurge (dem′i-urj); Greek, *dēmiourgos*, a handicraftsman), a designation applied by Plato and other philosophers to the Divine Being, considered as the Architect or Creator of the universe. The Gnostics made a distinction between the Demiurge and the Supreme Being; with them the first is the Jehovah of the Jews, who, though deserving to be honored as the Creator, was only the instrument of the Most High.

Demmin (dem-mēn′), an old town of Prussia, province of Pomerania, 70 miles W. N. W. from Stettin, with manufactures of woolen and linen cloth, hats, leather, hosiery and tobacco; and a good trade. Pop. 12,541.

Democracy (de-mok′ra-si), the rule of a people by the people themselves; that form of government in which the sovereignty of the state is vested in the people, and exercised by them either directly, as in the small republics of ancient Greece, or indirectly, by means of representative institutions, as in the constitutional states of modern times. The term is also applied in a collective sense to the people or populace, especially the populace regarded as rulers. See also next article.

Democrat (dem′ō-krat), one who adheres to democracy. In the United States, a member of one of the two great political parties into which that country is divided; opposed to *Re-*

publican. The main features of the Democratic principles are decentralization, self-government of the states, and tariff for revenue only. The Democratic party was in the ascendant during most of the time from the election to the Presidency of Jefferson, in 1800, to that of Lincoln, in 1860. Since the latter date the Republicans have nearly always been in control of the government, the only Democratic Presidents being Cleveland, who served two terms, at disconnected intervals, and Woodrow Wilson.

Democritus (de-mok'ri-tus), a Greek philosopher of the new Eleatic school, a native of Abdĕra, who was born between 470 and 460 B.C. He traveled to Egypt, where he studied geometry, and probably visited other countries, to extend his knowledge of nature. Among the Greek philosophers he enjoyed the instruction of Leucippus. He afterwards returned to his native city, where he was placed at the head of public affairs. Indignant at the follies of the Aberites, he resigned his office and retired to solitude, to devote himself exclusively to philosophical studies. According to later biographers he was called 'the laughing philosopher,' from his habit of laughing at the follies of mankind. In his system he developed still further the mechanical or atomical theory of his master Leucippus. Thus he explained the origin of the world by the eternal motion of an infinite number of invisible and indivisible bodies or atoms, which differ from one another in form, position, and arrangement, and which have a primary motion, which brings them into contact, and forms innumerable combinations, the result of which is seen in the productions and phenomena of nature. In this way the universe was formed fortuitously, without the interposition of a First Cause. The eternal existence of atoms (of matter in general) he inferred from the consideration that time could be conceived only as eternal and without beginning. He applied his atomical theory, also, to natural philosophy and astronomy. Even the gods he considered to have arisen from atoms, and to be perishable like the rest of things existing. In his ethical philosophy Democritus considered the acquisition of peace of mind as the highest aim of existence. He is said to have written a great deal; but nothing has come to us except a few fragments. He died 370 B.C., at an advanced age. His school was supplanted by that of Epicurus.

Demogorgon (dē-mo-gor'gon), a mysterious divinity in pagan mythology viewed as an object of terror rather than of worship, by some regarded as the author of creation, and by others as a famous magician, to whose spell all the inhabitants of Hades were subjected.

Demoiselle (dem-wȧ-zel'), the Numidian crane (*Anthropoides virgo*), an African bird which visits the south of Europe. It is about 3 feet in length, and differs from the true cranes in having the head and neck quite feathered and the tertials of the wings elongated and hanging over the tail. It has its name from its gracefulness and symmetry of form.

Demoivre (dē-mwȧ-vr), ABRAHAM, a French mathematician, born in 1667; died at London in 1754. He settled in London after the revocation of the edict of Nantes, and gained a livelihood by becoming a teacher of mathematics. His chief works are: *Miscellanea Analytica; The Doctrine of Chances, or a Method of Calculating the Probabilities of Events at Play;* and a work on annuities; besides Papers in the *Transactions* of the Royal Society, of which he was a fellow.

Demon (dē-mun; Greek, *daimōn*), a spirit or immaterial being of supernatural but limited powers, especially an evil or malignant spirit. Among the ancient Greeks the name was given to beings similar to those spiritual existences called angels in the Bible. In the New Testament evil spirits are called demons (commonly translated 'devils'). A belief in demons is found in the oldest religions of the East. Buddhism reckons six classes of beings in the universe; two, gods and men, are accounted good; the other four are malignant spirits. The Persians and the Egyptians had also a complete system of demons; and in Europe, up till the middle ages, the divinities of oriental, classical, and Scandinavian mythology often figure, from the Christian point of view, as evil spirits. In later times phases of demonology may be seen in the witchcraft mania and the spiritualism of the present day.

Demoniac (de-mō'ni-ak), a person whose mental faculties are overpowered, and whose body is possessed and actuated by some created spiritual being; especially a person possessed of or controlled by evil spirits. The New Testament has many narratives of demoniacs, and various opinions are entertained in regard to the characters of their affliction.

Demonology (dē-mon-ol'o-ji), the doctrine or science

which treats of the nature or character of demons or evil spirits.

Demonstration (dem-un-strā'shun), in a logical sense, any mode of connecting a conclusion with its premises, or an effect with its cause. In a more rigorous sense it is applied only to those modes of proof in which the conclusion necessarily follows from the premises. In ordinary language, however, demonstration is often used as synonymous with *proof*.

Demonte (dā-mōn'tā), a town of North Italy, on the Stura, 14 miles S. W. from Cuneo. Pop. of commune, 5155.

De Morgan (de mor'gan), AUGUSTUS, mathematician and logician, was born at Madura, in Southern India, in 1806; died in 1871. His writings are very numerous and include *Elements of Arithmetic, Elements of Algebra, Elements of Trigonometry, Essay on Probabilities and on their Application to Life Contingencies and Insurance Offices, Formal Logic.*

De Morgan, WILLIAM FREND, English author, born in 1839 at London, adopted art as a profession and achieved considerable fame in stained glass-work. In 1905 he commenced as a writer of fiction. His novels include *Alice-for-Short, Joseph Vance* (nearly 300,000 words), *Somehow Good, It Never Can Happen Again, An Affair of Dishonor,* and *When Ghost Meets Ghost* (written in 1914). He died Jan. 15, 1917.

Demos (dē'mos; Greek), the people as a whole, or the body of people of the lower class as distinguished from those of rank, wealth, or position.

Demosthenes (dē-mo's'the-nēz), a famous ancient Greek orator, the son of a sword-cutler at Athens, where he was born in 382 (according to some in 385) B.C. His father left him a considerable fortune, of which his guardians attempted to defraud him. Demosthenes, at the age of seventeen years, conducted a suit against them himself, and gained his cause. He then set himself to study eloquence, and though his lungs were weak, his articulation defective, and his gestures awkward, by perseverance he at length surpassed all other orators in power and grace. He thundered against Philip of Macedon in his orations known as the *Philippics*, and endeavored to instill into his fellow-citizens the hatred which animated his own bosom. He labored to get all the Greeks to combine against the encroachments of Philip, but Macedonian gold and their want of patriotism frustrated his efforts. He was present at the battle of Chæroneia (380 B.C.), in which the Athenians and Bœotians were defeated by Philip, and Greek liberty was crushed. On the accession of Alexander, in 336, Demosthenes tried to stir up a general rising against the Macedonians, but Alexander at once adopted measures of extreme severity, and Athens sued for mercy. It was with difficulty that Demosthenes escaped being delivered up to the conqueror. In 324 he was imprisoned on a false charge of having received a bribe from one of Alexander's generals, but managed to escape into exile. On the death of Alexander the next year he was recalled, but the defeat of the Greeks by Antipater caused him to seek refuge in the temple of Poseidon, in the island of Calauria, on the coast of Greece, where he poisoned himself to escape from the emissaries of Antipater (322 B.C.). The character of Demosthenes is by most modern scholars considered almost spotless. His fame as an orator is equal to that of Homer as a poet. Cicero pronounces him the most perfect of all orators. He carried Greek prose to a degree of perfection which it never before had reached. Everything in his speeches is natural, vigorous, concise, symmetrical. We have under his name sixty-one orations, some of which are not genuine. The great opponent—and indeed enemy—of Demosthenes as an orator was Æschines, and a controversy with the latter called out one of the noblest efforts of the great orator.

Demotic Alphabet (dē-mot'ik; or ENCHORIAL), a simplification of the hieratic, which again was a contraction of the hieroglyphic characters. See *Hieroglyphic Writing.*

Demotica, or DIMOTIKA (dē-mo't'i-ka), a town of Roumelia, on the right bank of the Maritza, 20 miles south from Adrianople; the see of a Greek archbishop; pop. about 10,000.

Dempster (dem'ster), THOMAS, a Scotch writer, was born at Muiresk in 1529; died at Bologna in 1625. He studied in various institutions, became noted for learning, and is said to have been regent of the College of Navarre, Paris, at the age of seventeen. He held professorships of law and belles-lettres at Toulouse, Nimes, Pisa and Bologna, and became noted for his quarrelsome temper, which often involved him in scenes of armed violence. The best known among his many works is *Historia Gentis Scotorum*, a biographical dictionary of the authors and saints of Scotland, many of them fictitious. A more valuable work is *De Etruria Regali.*

Demulcents (dē-mul'sents), medicines which tend to soothe or protect the mucous membranes against irritants. They are generally composed of starch, gum, albuminous or oily substances largely diluted.

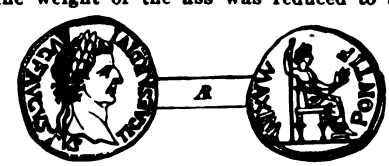
Demurrage (de-mur'aj) in maritime law, the time during which a vessel is detained by the freighter, beyond that originally stipulated, in loading or unloading. When a vessel is thus detained she is said to be *on demurrage*. The name is also given to the compensation which the freighter has to pay for such delay or detention. Demurrage must be paid though it be proved the delay is inevitable; but it cannot be claimed where it arises from detention by an enemy, tempestuous weather, or through the fault of the owner, captain, or crew. The term is applied also to detention of railway freight cars, etc.

Demurrer (de-mur'er), in law, a stop at some point in the pleadings, and a resting of the decision of the cause on that point; an issue on matter of law. A demurrer confesses the fact or facts to be true, but denies the sufficiency of the facts in point of law to support the claim or defense.

Demy (de'mī), a particular size of paper—in America, writing paper, 16x21 inches; in Great Britain, printing paper, 17½x22 inches; writing paper, 15x20 inches; drawing, 17x22 inches.

Denain (dē-nan), a town of Northern France, dep. Nord, 6 miles from Valenciennes. It stands in the center of a coal-field, and has ironworks, etc. A great victory was gained here in 1712 by the French under Villars over the allies under Eugene and Albemarle. Pop. 22,845.

Denarius (de-nā'ri-us), a Roman silver coin worth 10 asses or 10 lbs. of copper originally, and afterwards considered equal to 16 asses, when the weight of the ass was reduced to an



Denarius of Tiberius Cæsar.

ounce on account of the scarcity of silver. The *denarius* was equivalent to about 7¾*d.* English money. There was also a gold denarius equal in value to 25 silver ones.

Denatured Alcohol. Under a law passed by the United States Congress in 1907, on alcohol intended for use as fuel or for illuminating purposes, or other mechanical employment, the internal tax need not be paid. But to avoid taxation it must be rendered unfit for drinking by the addition of such unpalatable substances as wood alcohol, pyridin, benzola, sulphuric ether, or animal oil. Thus treated it is spoken of as denatured.

Denbigh (den'bi), a county of North Wales, on the Irish Sea: area, 664 square miles, of which about a fourth is arable. Along the N. the ground is level, in the E. hilly, while the mountains in the S. and W. rise from 1000 to 2500 feet. There are several beautiful and fertile vales, among the more celebrated of which are the vales of Llangollen, Clwyd and Conway. Barley, oats and potatoes are grown on the uplands; and in the rich valleys wheat, beans, and peas. Cattle and sheep are reared, and dairy husbandry is carried on to a considerable extent. The minerals consist of lead, iron, coal, freestone, slate and millstone. Flannels, coarse cloths and stockings are manufactured. The principal rivers are the Clwyd, the Dee and the Conway. Pop. 144,796.—The county town Denbigh is near the center of the Vale of Clwyd, 25 miles W. of Chester, picturesquely situated on a rocky eminence, the summit of which is crowned by the ruins of an ancient castle. Tanning and shoemaking are carried on. Pop. 6892.

Denderah (den'dėr-a; the *Tentyra* of the Greeks and Romans), an Arab village of Upper Egypt, on the left bank of the Nile, 28 miles N. of Thebes, celebrated for its temple dedicated to Athor, the Egyptian Venus, the best preserved of any of the great temples of antiquity in Egypt.

Dendermonde (den-dėr-mōn'de), or TERMONDE, a town of Belgium, province of East Flanders, at the confluence of the Dender with the Scheldt, 12 miles N. W. from Brussels. It is strongly fortified, defended by a citadel, and surrounded, by low, marshy ground which can be laid under water. Manufactures, woolens, linens, tobacco, etc. The town was taken by Marlborough in 1706. Pop. 9719.

Dendrite (den'drīt), a stone or mineral, on or in which are figures resembling shrubs, trees, or mosses. The appearance is due to arborescent crystallization, resembling the frostwork on our windows. The figures generally appear on the surfaces of fissures and in joints in rocks, and are attributable to the presence of the hydrous oxide of man-

ganese, which generally assumes such a form.—Thread-like prolongations of nerve cells bear the same name.

Dendrobium (den-drō'bi-um), an extensive genus of epiphytes dispersed over the damp tropical forests of Asia, order Orchidaceæ. They vary much in habit; many are cultivated in hothouses on account of the beauty of their flowers.

Dendrophis (den'drō-fis), a genus of harmless serpents, family Colubridæ, found in India and Africa, living on trees and feeding on reptiles.

Dengue (deng'gā), a febrile epidemic disease of the West Indies and Southern United States, the symptoms of which are such as would accompany a mixture of scarlet fever and rheumatism.

Denham (den'am), DIXON, lieutenant-colonel and African traveler, was born at London in 1786; died at Sierra Leone, in 1828. In 1823-24 he was engaged, in company with Captain Clapperton and Dr. Oudney, in exploring the central regions of Africa. Denham himself explored the region around Lake Tchad, was wounded and separated from his company, but found his way home after great suffering, when he published his *Narrative of Travels*. In 1826 he went to Sierra Leone as superintendent of the liberated Africans, and in 1828 was appointed lieutenant-governor of the colony.

Denham, SIR JOHN, a poet, born at Dublin in 1615; died in 1689, and was buried in Westminster Abbey. In 1641 he first became known by his tragedy of *The Sophy*, and in 1642 he published his first edition of his most celebrated poem, called *Cooper's Hill*. He was subsequently entrusted with several confidential missions by the royalist party, and, being detected, fled to France. At the restoration, in 1660, he obtained the office of surveyor of the king's buildings, and was created a knight of the Bath, and a fellow of the newly formed Royal Society.

Denina (dā-nē'nȧ), CARLO GIOVANNI MARIA, an Italian historian, born in 1731 at Revello, in Piedmont. He became professor at Pinerolo, and afterwards at Turin, where he published the first three volumes of his *History of Italian Revolutions* (1769), containing a general history of Italy. In 1777 he went to Rome, and four years later to Berlin, where he was welcomed by Frederick the Great, an account of whose life and reign he afterwards wrote. Most of his works—*History of Piedmont, Political and Literary History of Greece*, etc.—were written at Berlin. In 1804 he was introduced to Napoleon, who appointed him imperial librarian at Paris. He died in 1813.

Denis, ST. (saṇ deh-nē), a town in France, department of the Seine, 6 miles north of Paris, lying within the lines of forts surrounding the capital. It contains the famous abbey church of St. Denis, a noble Gothic structure, in part dating from the eleventh century or earlier, but much was done in the way of restoration in the nineteenth century. St. Denis was the burial place of the kings of France; and all her rulers from Hugh Capet downwards, besides some of the earlier dynasties, lay there till 1793, when the revolutionary fury of the convention caused the tombs to be rifled and the church to be denuded. At the restoration Louis XVIII again sought out the relics of his ancestors, so far as they could be found, and had them buried here, and there is now again a long series of restored royal tombs, with numerous other monuments, much stained glass, and modern decoration. The church is about 354 feet long and 92 high. Pop. (1911) 71,549.

Denis, ST., (deh-nē; Latin, *Dionysius*), the apostle of the Gauls. He set out from Rome on his sacred mission towards the middle of the third century, became the first Bishop of Paris, and was put to death by the Roman Governor Pescennius. Catulla, a heathen lady converted by the sight of the saint's piety and sufferings, had his body buried in her garden, where the Abbey of St. Denis now stands.

Denison (den'i-sun), a city of Grayson Co., Texas, 73 miles N. of Dallas. It is an industrial city with 12 railroad outlets. The principal industries are textile mills, peanut factories, grain elevators, flouring mills, creosote works, cottonseed products mill, machine shops, etc. It is in a rich farming section. Pop. (1910) 13,632; (1920) 17,065.

Denison University, a Baptist institution at Granville, Ohio, founded in 1831 under the name of Granville Literary and Theological Institute. The name was changed to Denison University in 1856. With it is affiliated the Shepardson College for Women. Students, 900; faculty 46.

Denison, GEORGE TAYLOR, military author, was born at Toronto, Canada, in 1839. He entered the Canadian militia and became commander of the governor-general's bodyguard. His *History of Cavalry* won a prize of 5000 rubles, offered by the Czar of Russia.

Other works were *Manual of Outpost Duties*, *Modern Cavalry*, etc.

Denizen (den'i-zn), in English law, an alien who is made a subject by the sovereign's letters patent, holding a middle state between an alien and a natural-born subject. A denizen in the U. S. is a naturalized citizen.

Denmark (den'mark), a kingdom of northern Europe, consisting of the peninsula of Jutland, the island of Bornholm, and a group of islands, the most important of which are Seeland (Själland), Fünen and Lalland (Laaland). Besides these there are the outlying possessions and colonies of the Faroe or Sheep Islands (515 square miles; pop. 19,600), Greenland (ice-free portion about 50,000 square miles; total area 830,000 square miles; pop. 13,460), and Iceland (40,497 square miles; pop. 86,500). Iceland, by the act for the creation of a Danish-Icelandic Federal Constitution, which came into force December 1, 1918, became a free and independent state under the same sovereign as Denmark. The area of the home possessions is 15,042 square miles; pop. 2,921,000. Following the European war (1914-18) Schleswig was added to Denmark as the result of a plebiscite of the inhabitants, taken in accordance with the terms of the Treaty of Peace. Copenhagen is the capital; other chief towns are Aarhus, Odense, Aalborg, Horsens, and Randers. Denmark is divided into 18 administrative provinces or districts, besides the capital, nine of these making up Jutland.

On the south, Denmark is bounded by Germany and the Baltic; on the west it is washed by the North Sea; northwards it is separated from Norway by the Skager Rack; eastward it is separated from Sweden by the Kattegat and the Sound. Denmark, whether insular or mainland, is a very low-lying country, the eastern side of Jutland, where the highest elevation occurs, not exceeding 550 feet. All the rocks belong to the upper series of the secondary and to the tertiary formation. The rock most fully developed is the chalk, above which is an extensive boulder formation containing seams of lignite. Above this are thick beds of clay and marl. Where this prevails, as in Seeland and the east of Jutland, the soil is generally fertile; but where it is overlaid with deep beds of sand, as in the north and west of Jutland, the aspect is extremely desolate. Nearly the whole west coast, indeed, is rendered almost uninhabitable by the drift-sand which has formed an almost uninterrupted line of sterile downs called *Klitter*, extending from Cape Skagen (or The Skaw) to Blaavands Hook. A large portion of Jutland consists of heathy or moory land, comparatively unprofitable. Elsewhere it exhibits a fertile, undulating surface. The islands, especially Seeland and Fünen, are fertile and present many landscape beauties. The country was once covered with great forests, but these have disappeared, and Denmark is largely dependent on other countries for her supplies of timber. Woods of some extent still exist, however, especially in the islands. In the earliest prehistoric times (the stone age) the Scotch fir was the prevailing tree, and subsequently the oak. The principal tree now is the beech, the oak forming but a small portion of the timber of Denmark. The elm, ash, willow, aspen and birch are met with in small numbers or singly. Pine forests have been planted in the north of Jutland and elsewhere. Denmark has numerous streams but no large rivers; the principal is the Guden, which flows northeast through Jutland into the Cattegat. It is navigable for part of its course. Less important streams are the Holm, the Lonborg and the Stor Aa. All the others are insignificant brooks and streamlets. The lakes are very numerous but not large, the largest not exceeding 5½ miles in length by about 1½ miles broad. There are numerous winding inlets of the sea that penetrate far into the land. The largest of these, the Liimfiord in Jutland, entering from the Cattegat by a narrow channel, winds its way through to the North Sea, thus making northern Jutland really an island. In this fiord, which widens out greatly in the interior and gives off various minor fiords, there are one large and various small islands. Intercourse between the various islands and parts of the kingdom, separated from each other by water, is well kept up by ferries, etc. and the country is well supplied with railways both in Jutland and the islands. Copenhagen, Aalborg, Aarhuus and Randers are the chief seaports. Owing to the lowness of the land and its proximity to the sea on all sides, the climate is remarkably temperate for so northerly a region, though the thermometer in winter may sink to 22° below zero, and in summer rise to 89°. Violent winds are frequent, and rains and fogs prevalent, but the climate is favorable to vegetation.

The agricultural land is greatly subdivided, as the law interdicts the union of small farms into larger. Among crops the greatest area is occupied by oats, which are grown all over the country, but

best in Jutland. Barley is grown chiefly in Seeland, and is largely used in brewing beer, the common beverage of the country. Rye is extensively raised, and the greater part of the bread used in Denmark is made from it. Turnips, beans, peas, flax, hemp, hops, tobacco, etc., are also grown; but in general cattle-breeding, grazing and the dairy take up most of the farmer's attention in Denmark. The old Danish breed of horses, found chiefly in Jutland, has long been famous for strength, symmetry, docility and bottom. The fisheries are still important, but not so much so as formerly. The herring, turbot, torsk and salmon are the most abundant. The manufactures, although progressing, are not yet of great importance. Paper, gloves, the woolens and earthenware of Jutland, the wooden clocks of Bornholm, are the chief. There are also iron-foundries, sugar-refineries, some extensive tanneries, and many distilleries. The people of Denmark bake their own bread, brew their own beer, and make the greater part of their house furniture and utensils with their own hands.

The commerce of Denmark is carried on chiefly with Great Britain, Germany, Norway, Sweden and Russia, Germany possessing the largest share, and Great Britain a little less than Germany. The value of imports was, 1912, $219,093,000; exports, $159,922,000. The chief imports are textile manufactures, metal goods, coal, timber, oil, coffee, sugar, tobacco, fruit, etc. The chief exports are cattle, horses and swine, butter (a most important item), bacon, hides, flour, eggs, and other edibles. Much of the butter and other agricultural produce goes to Britain. The mercantile marine has a total tonnage of about 550,000. The railways have a length of about 3000 miles. Since 1875 the unit of the Danish monetary system has been the *krone*, or crown, value 26.8 cents. The krone is divided into 100 *öre*. The Danish *pound* weight is equal to 1.102 avoirdupois. The *barrel* or *toende*, is equal to 3.8 imperial bushels; the *viertel* to 1.7 English gallons. The *foot* equals 12.356 English inches; the *mile* is 4.684 English miles. These measures have been superseded by the metric system, legally established in 1907.

The population of Denmark is composed almost exclusively of Danes, with a few thousand Jews and others. The Danes have regular features, fair or brownish hair, and blue eyes. They still maintain their reputation for seafaring skill and hospitable customs. They are almost exclusively Lutherans in religion, but unlimited toleration is extended to all faiths. Jews, however, though themselves electors, cannot be elected as representatives. At the head of the educational institutions stand the University of Copenhagen and the Holberg Academy at Soröe. The provinces are well supplied with gymnasia and middle schools, and primary instruction is given at the public expense in the parochial schools. It is rare to meet a peasant who cannot read and write, even among the poorer class.

The government of Denmark was originally an elective monarchy. In 1661 it became a hereditary and absolute monarchy, and in 1849 a hereditary constitutional one, the legislative power being vested in the king and diet jointly. The diet or *Rigsdag* consists of two chambers, the *Landsthing* or upper house, the *Folkething* or lower house. The former is a senate of 66 members, twelve of whom are nominated for life by the crown, the others being elected for eight years. The members of the Folkething are 114 in number, directly elected by universal suffrage, and hold their seats for three years. The Rigsdag meets every October, and all money bills must be submitted to the lower house. The army consists of all the able-bodied young men of the kingdom who have arrived at the age of twenty-one years. The time of service is eight years in the regular troops, and afterwards eight more in the reserve. Every corps has to drill for thirty to forty-five days every year. The army on a war footing has a total strength of about 83,000 men. The navy is unimportant in number and strength. The revenue in 1912 amounted to $30,599,000. The national debt in 1913 was $95,579,000.

History.—The oldest inhabitants of Denmark whom we find mentioned by name were the Cimbri, who dwelt in the peninsula of Jutland, the *Chersonesus Cimbrica* of the Romans. They first struck terror into the Romans by their incursion, with the Teutones, into the rich provinces of Gaul (113-101 B.C.). After this, the Goths broke into Scandinavia, and appointed chiefs from their own nation over Denmark, Norway and Sweden. For a considerable time Denmark was divided into a number of small states, whose inhabitants lived mostly by piracy along the neighboring coasts. In 787 they began to make their descents on the eastern coasts of England, and along with other inhabitants of Scandinavia they conquered Normandy in 876-7. Under Gorm the Old all the small Danish states were united in 920, and his grandson Sweyn, now the head of a powerful kingdom, commenced the conquest of Norway and of England, which was ultimately completed by his son Canute,

Canute died in 1035, leaving a powerful kingdom to his successors, who, in 1042, lost England, and in 1047 Norway. In 1047 Sweyn Magnus Estridsen ascended the throne, but with the exception of the great Waldemar the new dynasty furnished no worthy ruler, and the power of the kingdom decayed considerably till the accession of the politic Queen Margaret in 1387, who established the union of Calmar in 1397, uniting under her rule Denmark, Sweden and Norway. In 1448 Christian I, count of Oldenburg, was elected to the throne, thus founding the royal family of Oldenburg, which kept possession of the throne till 1863. Under the rule of Christian, Norway, Sweden, Schleswig and Holstein were connected with the crown of Denmark, but under his successor, Christian II, Sweden established its independence. Under Frederick I (1523-33) the Reformation was introduced. Christian IV of Denmark ascended the throne in 1588, took part in the Thirty Years' war, and engaged twice in a war with Sweden, with most unfortunate results. Frederick III again engaging in war with Sweden in 1657 was equally unsuccessful. Christian V and Frederick IV were conquered in the war with Charles XII. Denmark, however, after the fall of Charles XII, gained by the Peace of 1720 the toll on the Sound, and maintained possession of Schleswig. After this Denmark enjoyed a long repose. In 1800, having acceded to the northern confederacy, the kingdom was involved in a war with Great Britain, in which the Danish fleet was defeated at Copenhagen, April 2, 1801. In 1807, there being reason to think that Denmark would join the alliance with France, a British fleet was sent up the Sound to demand a defensive alliance or the surrender of the Danish fleet as a pledge of neutrality. Both were denied, and the Danish capital was bombarded and forced to capitulate, the whole fleet being delivered up to the British. The war, however, was continued, Denmark forming new alliances with Napoleon until 1814, when a peace was concluded by which she ceded Heligoland to England in exchange for the Danish West India Islands, and Norway to Sweden in exchange for Swedish Pomerania and Rügen, which, however, she shortly after surrendered to Prussia, receiving in return Lauenburg and a pecuniary compensation. In June, 1815, the king entered into the German confederacy as representing Holstein and Lauenburg. In 1848 Schleswig and Holstein revolted and were not finally subdued till 1852. In 1857 the Sound dues were abolished. Frederick VII died in 1863 and with him the Oldenburg line became extinct. He was succeeded by Christian IX (Prince of Sonderburg-Glücksburg). At the commencement of 1864 the Danish territory was politically distributed into four parts, viz., Denmark Proper (consisting of the Danish islands and North Jutland), the duchy of Schleswig or South Jutland, with a population more than one-half Danish, the remainder Frisian and German; the duchy of Holstein, purely German; the duchy of Lauenburg, also German. The measures of the Danish government compelling the use of the Danish language in state schools having given great umbrage to the German population of the duchies, the disputes resulted in the intervention of the German confederation, and ultimately Holstein was occupied by the troops of Austria and Prussia (1864). After a short campaign the Prussians captured Alsen, overran the greater part of Jutland, and forced the Danes to accept a peace (August 1), by which they renounced their right to the duchies of Schleswig, Holstein and Lauenburg. A difference now arose between Austria and Prussia as to what should be done with the duchies, and Prussia showing an evident intention of annexing them, the result was a war between the two powers, which ended in the total defeat of Austria at Sadowa, or Königgrätz, July 3, 1866. By the treaty which followed Prussia obtained the duchies. The chief events since then have been prolonged struggle between the government and the Folkething; the influence of a new political party (1893) desiring parliamentary concord in the agrarian interest; the rejection of the proposal to sell the Danish West Indies to the United States; the death of Christian IX and accession of Frederick VIII (1906); the death of Frederick VIII and accession of Christian X (1912).

Language and Literature.—The Danish language belongs to the Scandinavian branch of the Teutonic family of languages, and is a sister of the Swedish and Norwegian. It is written either in the German or the Roman characters. From the long union of Norway with Denmark, Danish became the written language of the Norwegians, and is still the language of the educated classes. The oldest literary monuments of the Danish language consist of the laws of the early kings in the twelfth century. Next to these come the heroic ballads (*Kjämpeviser*), some of which date from the thirteenth, others from the fourteenth, fifteenth and sixteenth centuries. They were collected while they still lived in the

mouths of the people, by A. S. Vedel. Other ancient literary monuments probably belonging to the thirteenth century, are the Danish *Rhyming Chronicle* and a Danish translation of the Old Testament. During the Reformation period Christian Pedersen (1480-1554) did for the Danish language much what Luther did for the German, by publishing, besides other works, a translation of the New Testament and the Psalter and later the complete Bible. The sixteenth and seventeenth centuries were distinguished by the publication of a number of works on the national history, among the writers of which we may mention Hans Svaning the elder, Arild Hvitfeld, Nils Krag, Vitus Bering, Ramus, etc. Modern Danish poetry commences in the period succeeding the Reformation with hymns, Scriptural dramas, edifying narratives, etc. Justesen Raach and Erik Pontoppidan the elder are among the chief names in this department. Anders Bording (died in 1677) and Thomas Kingo (died in 1723) made names as lyric poets, the sacred poems of the latter being a noble contribution to Danish literature. A new epoch began with Louis Holberg (1684-1754), who was the founder of the Danish stage, and his name and that of the lyric and dramatic poet Ewald mark the brightest period of the national literature. Among the comic dramatists Peder Andreas Heiberg, and among song writers the celebrated Jens Baggesen hold the first place. Fresh life was inspired into Danish poetry by Adam Oehlenschläger (1779-1850), contemporary with whom was Adolf Wilhelm Schack Staffeldt (1770-1826), a lyric poet of the first rank. In 1811 Bernhard Severin Ingemann made his appearance, first as a lyric poet, but afterwards turned his attention to the drama, and later to the historic romance. Among dramatic writers the names of Johan Ludwig Heiberg, Overskou, Hostrup, Erik Bögh and the more recent Molbech and Edvard Brandes, are well known. Among poets we may mention Heiberg, Andersen, Blicher, Hölst, Paludan-Müller and Rosenhoff; the modern school being represented by Carl Ploug, Drachmann and Gjellerup. Among those who have displayed a talent for novel writing are Ch. Winther, Carl Bernhard, Meyer Aron Goldschmidt, Sten Stensen Blicher, who describes common life in Jutland with poetic truth. Among other distinguished modern writers we must mention Hendrik Hertz, a lyric poet and dramatist; Hans Christian Andersen, famous throughout Europe for his stories; and Waldemar Thisted, a lyrist and novel writer of considerable note. Among scholars and critics may be mentioned Madvig; Westergaard, Rask, and, above all, Georg Brandes, who has been ranked with Sainte-Beuve.

Dennewitz (den'e-vits), a small village of Brandenburg, Prussia, famous for the battle, September 6, 1813, in which the Prussians, aided toward the end by Russian and Swedish armies, defeated the French.

Dennis (den'is), JOHN, an English dramatist and critic, born in London in 1657; died in 1734. He wrote a number of dramatic pieces and poems, and at length settled down to criticism. His irritability and rancorous criticisms involved him in perpetual broils. Pope gave him a place in his *Dunciad*, and Swift satirized him with merciless wit in his *Narrative of the Deplorable Frenzy of Mr. John Dennis*.

Dennison (den'i-son), a city of Tuscarawas Co., Ohio, on the Panhandle Ohio Canal. The Pittsburgh, Cincinnati & St. Louis R. R. shops are here. Pop. (1920) 5524.

Denon (dė-nōn), DOMINIQUE VIVANT, BARON DE, a distinguished French artist, born in 1747, of a noble family. Of amiable manners, and with a talent for the arts, he was appointed gentleman-in-ordinary to Louis XV. He was afterwards employed in the diplomatic service, and was long connected with the French embassy in Naples, where he greatly improved his talent for drawing and engraving. Returning to France he became acquainted with Bonaparte, accompanied him in his campaigns, was made inspector-general of museums, selected the works of art to be transferred from conquered countries to the Louvre, and superintended the erection of monuments in honor of the French successes. He died at Paris in 1825. He published *Travels in Upper and Lower Egypt*, finely illustrated.

Dénouement (dā-nö-mäṇ), a French term naturalized in England, and signifying the winding up or catastrophe of a plot, the solution of any mystery, etc.

Density (d e n'si-ti ē), in physics, the quantity of matter contained in a body under a given bulk. If a body of equal bulk with another contains double the quantity of matter it is of double the density. Or if a body contain the same quantity of matter as another, but under a less bulk, its density is greater in proportion as its bulk is less than that of the other. Hence the density is directly proportional to the quantity of matter, and inversely proportional to the bulk or magnitude. The relative quan-

tities of matter in bodies are known by their gravity or weight, and when a body, mass, or quantity of matter is spoken of, its weight or gravity is always understood, that being the proper measure of the density or quantity of matter. The weights of different bodies, of equal bulks, indicate their relative densities. The density of solids, fluids and gases, as compared with that of water, is their *Specific Gravity* (which see). As for the density of the earth, see *Earth*.

Dental Formula (den'tal for'mū-la), an arrangement of symbols and numbers used to signify the number and kinds of teeth of a mammiferous animal. The *dental formula* of man is:

I. $\frac{2-2}{2-2}$, C. $\frac{1-1}{1-1}$, P.M. $\frac{2-2}{2-2}$, M. $\frac{3-3}{3-3}$ = 32,

which is read thus: Two incisors on each side of both jaws, one canine tooth on each side of both jaws, two præmolars on each side of both jaws, and three true molars on each side of both jaws, in all 32 teeth.

Dentalium (den-tā'li-um), a genus of gasteropodous molluscs, the shell of which consists of a tubular arcuated cone open at both ends, and resembling the tusk of an elephant in miniature. There are many species, known by the common name of tooth-shells.

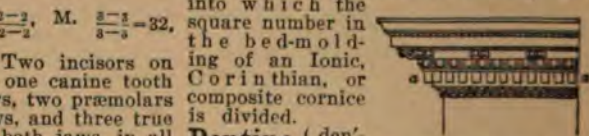
Dentaria (den-tā'ri-a), coral-root, a genus of plants, nat. order Cruciferæ. There are about twenty species, natives of temperate countries. They are ornamental herbs, with creeping, singularly toothed root-stocks, from which they receive the names of coral-root and toothwort. The stem-leaves are opposite or in whorls of three, and the flowers are large and purple. *D. bulbifĕra*, the only British species, is a rare plant in the southeast of England. *D. diphylla*, or pepperwort, a North American species, has roots that are used as mustard.

Dentatus (den-tā'tus), MANIUS CURIUS, an ancient Roman general of Sabine descent. In B.C. 290 he brought to a victorious termination the war with the Samnites, which had lasted for nearly fifty years. In B.C. 275 he defeated King Pyrrhus at Beneventum, for which he received a magnificent triumph. In B.C. 274 he was made consul for the third time and conducted to a successful issue the last war with the southern Italians. He died about B.C. 270.

Dentex (den'teks), a genus of acanthopterygious fishes of the family of the Sparidæ, or sea-breams. They have conical teeth, and those immediately in front are long and hooked inward. The *Dentex vulgāris*, common in the Mediterranean, sometimes attains the length of 3 feet. Its general appearance is not unlike the perch. It is esteemed as an article for food.

Dentifrice (den'ti-fris), a preparation for cleansing the teeth, of which there are various kinds in the form of tooth-powders, tooth-washes, or tooth-pastes. Cuttle-fish bone, finely powdered chalk, and charcoal are common dentifrices. Rhatany, catechu, myrrh and mastic are also often employed.

Dentils (den'tils), in architecture, the little cubes resembling teeth, into which the square number in the bed-moulding of an Ionic, Corinthian, or composite cornice is divided.



aa, Dentils of the Corinthian Cornice.

Dentine (den'tin), the ivory tissue lying below the enamel and constituting the body of a tooth. It consists of an organic basis disposed in the form of extremely minute tubes and cells, and of mineral matter.

Dentirostres (den'ti-ros-trez), a tribe of birds of the order Insessores or Perchers, including Shrikes, Butcher-birds, etc., characterized by having a notch and tooth-like process on each side of the margin of the upper mandible. They are rapacious and prey on weaker birds.

Dentistry (den'tis-tri), a branch of the healing art concerned with the mouth and teeth; practiced by dentists or dental surgeons. Dentistry has evolved from a scanty knowledge of the care of the teeth as held and crudely practiced by ancient races to the position of a science and art built upon the foundation of a liberal special education. From the beginning of history there has been a certain interest shown in the teeth. If we attempted to trace the earliest allusions to the care of the teeth we should be obliged to go back to the first works on medicine. There are references which lead us to suppose that centuries before the Christian era more or less thought was given the teeth. We are told that early Hindoo works on medicine of about 1500 B. C. contain allusions to the teeth and give rules for caring for the health of the mouth. These ancient people, it seems, had grasped a fact the importance of which is now being so generally recog-

nized, that the vestibule of the human body, through which its very sustenance enters, and through which germs of disease may also enter the system, should be kept clean and in order. Herodotus, the early Greek historian, refers to the care given diseases of the teeth; other writers claim to have found in Egyptian tombs forms of artificial teeth made of wood and ivory. One account of dentistry among the ancient Egyptians says: 'It is a singular fact that their dentists adopted a method not very long practiced in Europe, of stopping the teeth with gold, proofs of which have been obtained from some mummies at Thebes.' Similar claims are made for the earliest evidence of dentistry among the Chinese. The Chinese in ancient times were unusually advanced in the arts and sciences; one of the ancient kings of China, it is written, instituted a free medical school for those who wished to study medicine or its branches. Thus through Homer, Cicero, Aristotle, Hippocrates and others we might trace a certain knowledge of dentistry from those early days down to the middle or dark ages, when, with the other arts and sciences, it appears to have been practically lost. This dark period, it is estimated, covered about one thousand years. So dentistry, once practiced as an art and science, fell into the hands of blacksmiths and barbers, who practiced, in their crude fashion, the dressing of wounds, blood-letting, extraction of teeth, lancing of gums, etc., and the operator was known as the barber-surgeon. Generations passed before the dental specialist again appeared. Early in the seventeenth century dentistry was revived in Europe, but made little headway. At the beginning of the eighteenth century M. De Chemant devised a form of porcelain bridge and artificial crown. The French people thought much of their teeth and it is claimed that Dr. Fuchard in 1785 was the first in more modern times to suggest gold leaf as a filling material for decaying teeth. It is to America, however, that credit is due for placing dentistry in a commanding position as a profession. Within a century America has developed dentistry in so marvelous a way that it would require an entire volume to give the story.

Modern dentistry is divided into *operative, mechanical* and *surgical.* The thoroughly qualified dentist is, therefore, to some extent, physician, surgeon, artist and mechanic. *Operative dentistry* embraces all operations at the chair for the preservation of the natural teeth, their regulation, and the placing of artificial teeth on natural roots. *Prosthetic dentistry,* the modern term for all procedures performed in the laboratory, embraces such work as the construction of artificial dentures (plates), bridges, regulating appliances, artificial palates, splints for broken jaws, or other appliances and fixtures of a mechanical nature. Dental mechanics embodies unusual art possibilities, and the esthetic requirements are met in accordance with the artistic conception and culture of the dentist. *Surgical* operations coming under the care of the dentist are the extraction of teeth, removal of small tumors, small sections of bone, excising diseased ends of roots, curetting diseased bone, opening the larger sinuses through the jaw, etc.

As a distinctive profession dentistry has its colleges; its societies, state and national, where dentists meet for discussions; and its literature. There are numerous dental magazines published giving reports of the proceedings of society meetings, original articles, and editorial comments for the dissemination of the latest dental thought and methods. There is also a large number of books published upon various branches of practice. Modern dentistry has also demanded the operation of many manufacturing establishments, with large capital involved, to supply its professional equipment, artificial teeth, filling material, and other necessary articles. Practically every state has its own laws concerning the practice of dentistry, defining the methods of securing the right to practice; penalties for violation of the law, etc. Each state also has a Board of Dental Examiners, before which all applicants for license to practice, after having graduated from a reputable dental college, must pass an examination.

Without doubt, the greatest recent progress in dentistry has been along the lines of its relationship to the practice of medicine. A great surgeon has said that seventy-five per cent of all major operations are abdominal and that a large majority of these could be avoided if people had healthy mouths. It is now definitely shown that many physical disorders arise from dental diseases, and physicians today are referring certain cases to dentists for co-operative diagnosis and treatment. In this connection radiography (X-ray photography) has taken an important place. The X-ray is now looked upon by progressive dentists as indispensable in making proper diagnosis of certain diseased conditions in and about the teeth, as indispensable as anæsthesia and aseptic surgery. The radiograph (q. v.) shows the dentist the exact depth of pyorrhea pockets about the roots of the teeth, and, of greater import, it locates blind abscesses at or about the tip ends of roots which otherwise could not be seen. These

blind abscesses, it has been determined, frequently act as foci (centers of infection) for serious physical trouble.

The importance of dental service in the army and navy has been freely acknowledged by the government, and the value of the dental surgeon in his relationship to the military service is becoming increasingly evident. Particularly during our participation in the great world war in 1917-18, the value of dentistry to the nation was established. From an economic standpoint the importance of efficient dental service is recognized in the larger cities. It has been frequently demonstrated that people with healthy mouths do better work than those whose teeth are not given proper care. Consequently there are public clinics for school children and dentists retained by large industrial plants in the interest of their employees.

Dentition (den-tish'un), the cutting of teeth. See *Teeth*.

Denton (den'tun), a city, county seat of Denton Co., Texas, 35 miles N. of Dallas. It is an educational center, home of the College of Industrial Arts (State College for Women) and North Texas State Normal College. It has pressed brick plant, flouring and cotton mills, etc. Pop. (1920) 7626.

D'Entrecasteaux (dàn-tr-kas-tō'), a group of islands off the coast of British New Guinea (Papua). Total area, 1200 sq. miles.

Denudation (dē-nū-dā'shun), in geology, the act of washing away the surface of the earth by water, either in the form of constant currents or of occasional floods.

Denver (den'ver), the capital of Colorado, county seat of Denver Co., on the South Platte River, the largest city between the Missouri and the Pacific Coast. It is the wholesale and retail trading mart for the vast Rocky Mountain region, tapping a territory rich in silver, lead, zinc, and the special metals, including tungsten, molybdenum, etc., as well as the vast oil shale mountains of the western part of the State. Its manufacturing output is estimated at $100,000,000 annually. The live stock and packing industry of Denver represents an investment of more than $14,000,000. Grain, sugar beets, potatoes, extensive fruit orchards, all contribute to the commercial importance of the city. Seven great railroad systems radiate from Denver.

Among the notable buildings are the State Capitol, costing $2,800,000, built of Colorado granite; the State Museum Building, the municipal auditorium, with its great organ; the Denver University (founded as the Colorado Seminary in 1864, reorganized as the University of Denver, 1880), and many beautiful schools and churches. It is situated at an elevation of one mile above sea level, and the climate is dry and salubrious. It is 15 miles E. of the Rocky Mountains and is the gateway to 12 national parks and 32 national monuments. The city was founded in 1858 and named for J. W. Denver, governor of Kansas. Pop. (1900) 133,859; (1910) 213,381; (1920) 256,369.

Denver, University of, an institution for higher learning, founded in 1864, at Denver, Colorado, by Gov. John Evans. The name was changed to the University of Denver in 1880 and its scope greatly enlarged. The College of Liberal Arts, the Graduate School, the Summer School, and the Warren Academy, comprising the main departments of the university, are at University Park, within a half-hour's ride from Denver's business section; situated on a hill, it commands a fine view of the city and the Continental Divide. In the heart of the city are the University's Law, Dental, and Commerce Schools and Teachers' College. It has 1700 students.

Deodand (dē'o-dand; *Deo dandum*), a thing to be given or dedicated to God, an obsolete legal term for anything that had caused a person's death, all such chattels being forfeited by the old rule of the common law of England to the sovereign or lord of the manor. Its origin was attributed to the notion, that where a man was suddenly cut off in his sins expiation ought to be made for the benefit of his soul; and, accordingly, the chattel, which occasioned his death should be forfeited to the king, to be devoted by him to pious uses. Deodands were abolished in 1846.

Deodar (dē'o-dar), DEODAR CEDAR, or INDIAN CEDAR (*Cedrus Deodara*), a large and valuable Indian tree similar to the cedar of Lebanon, and by some considered only a variety. It is native to the Himalayas.

Deodorizers (dē-ō'der-Iz-ers), chemical substances which have the power of destroying fetid effluvia, as chlorine, chloride of lime, etc.

Deogarh (dā-o-*gar*), a town of Santal Paraganas District, Bengal, 170 miles N. W. of Calcutta, with a group of temples to which numerous pilgrims resort. Pop. about 10,000.

Deogiri (dā'o-gi-ri). See *Daulatabad*.

D'Eon de Beaumont (dā-on dė bō-mōn), CHARLES GENEVIÈVE LOUISE AUGUSTE ANDRÉ TIMOTHÉE, a notorious French character, chevalier, doctor of law, diplomatist, etc.,

born in 1728. He afterwards distinguished himself in the Seven Years' war, then went to London as secretary of the French legation, and ultimately became minister plenipotentiary. Having quarreled with the French government, he lived fourteen years in London in a kind of banishment. During these years he had occasionally dressed and passed as a female, and about this time his sex began to be doubted. In 1777 he returned to France, was ordered to dress as a woman, and continued to do so both there and after he returned to England (in 1785), where he died in great poverty in 1810, being then regarded by everyone as a female.

Deontology (dē-on-tol'ō-ji), or the science of duty; the term used by certain philosophic schools (Bentham, Spencer, etc.) to denote their doctrine of ethics.

Department (de-part'ment), a subdivision of executive government, under a subordinate officer. In the United States the government embraces the departments of state, justice, interior, war, navy, treasury, post-office, agriculture and commerce and labor, the heads of which form the Advisory Cabinet of the President. The government is conducted in three separate departments—the legislative, judicial and executive. The country is subdivided into military departments, each under an officer appointed by the President.

De Pauw (de-paw'), a university situated at Greencastle, Indiana; founded by the Indiana Conference of the Methodist Episcopal Church in 1837, and known as the Indiana Asbury University until 1884 when the name was changed in recognition of large bequests from Washington C. De Pauw. Besides the college of liberal arts there were schools of medicine, law, theology, pedagogy, music and art, but only the college of liberal arts and the school of music are at present operating. There were in 1914 50 instructors and about 1000 students.

De Pere (dē pēr'), a city of Brown Co., Wisconsin, on Fox River, 5 miles S. W. of Green Bay. It has foundries, paper and knitting and flour mills, farm implement works, boiler factories, etc. Pop. (1920) 5165.

Depew (dē-pū'), CHAUNCEY MITCHELL (1834-), an American lawyer, politician and orator, born at Peekskill, New York. He graduated at Yale in 1856 and became counsel for the New York Central Railroad, of which he later became president (1885). Actively engaging in politics he was successively secretary of state for New York and minister to Japan, and received 100 votes for the presidential nomination in the Republican Convention of 1888. He was United States Senator from New York 1899-1911. His orations and humorous after-dinner speeches gained him high reputation.

Depew, a village of Erie Co., New York, 8 miles E. of Buffalo. It has a number of manufactures. Pop. (1920) 5850.

Depilatories (de-pil'a-tur-iz), applications used to remove the hair from the body, especially the face and scalp, without injuring the texture of the skin. The celebrated *rusma* depilatory consists of quicklime and orpiment (tersulphuret of arsenic) boiled in water impregnated with a strong alkaline lye. Electrolysis is now employed, a fine needle being inserted at the root of each hair, thus destroying the root by the current.

Deponent (de-pō'nent), (1) in grammar, a verb passive in form but active or neuter in signification. (2) In law, a person who makes an affidavit, or one who gives his testimony in a court of justice; a witness upon oath.

Deposit (de-poz'it), in law, something given or entrusted to another as security for the performance of a contract, as a sum of money or a deed. In commerce, a deposit is generally either money received by banking or commercial companies with a view to employ it in their business, or documents, bonds, etc., lodged in security for loans. In the first case interest is usually paid to the depositor. The receipt given by the banker for money deposited with him is called a *deposit receipt.*

Deposit, in geology, a layer of matter formed by the settling down of mud, gravel, stones, detritus, organic remains, etc., which had been held in suspension in water.

Deposition (de-pō-zish'un), in law, the testimony given in court by a witness upon oath. It is also used to signify by way of answer to interrogatories. Depositions are frequently taken conditionally, or *de bene esse*, as it is called; for instance, when the parties are sick, aged, or going abroad, depositions are taken, to be read in court in case of their death or departure before the time for the trial to be held.

Deposition of a Clergyman, the degradation of a clergyman from office, divesting him (in churches which do not, like the Church of Rome, hold the indelible nature of orders) of all clerical character. See *Deprivation.*

Dépôt (dā'pō or dep'ō), a French word in general use as a term for a place where goods are received and stored; hence in military matters, a magazine where arms, ammunition, etc., are kept. The term is now usually applied to those companies of a regiment which remain at home when the rest are away on foreign service.

Deprivation (dep-ri-vā'shun), the removing of a clergyman from his benefice on account of heresy, misconduct, etc. It entails, of course, loss of all emoluments, but not the loss of clerical character.

De Profundis (dē pro-fun'dis), in the liturgy of the Roman Catholic Church, one of the seven penitential psalms, the 130th of the Psalms of David, which in the Vulgate begins with these words, signifying, 'Out of the depths.' It is sung when the bodies of the dead are committed to the grave.

Deptford (det'ford), a parliamentary borough, England, in the counties of Kent and Surrey, on the right bank of the Thames, forming now part of London. It has some manufacturers of pottery, chemicals, soap, etc. The old naval dockyard was shut up in 1869, but the royal victualling yard is still the largest establishment of its kind. Pop. (1911) 109,498.

Deputy, one who exercises an office as representing another.—*Chamber of Deputies*, the lower of the two legislative chambers in France and in Italy, elected by popular suffrage, and corresponding in some respects to the House of Commons in Britain, and the House of Representatives in America. See *France, Italy*.

De Quincey (de quin'si), THOMAS, an English author, the son of a Manchester merchant, born at Greenhay, near Manchester, in 1785. In 1793 his father died, leaving the family a fortune of £30,000. After attending for some time the Bath and Manchester grammar schools, where he showed precocious ability, especially in classical studies, he importuned his guardian to send him to Oxford University, and on being refused he ran away from school, ultimately arriving in London in an absolutely destitute condition. His sufferings at this time he has described in his *Confessions of an English Opium Eater*. At length, in 1803, he matriculated at Oxford, and it was in the second year of his course here that he began to take opium in order to alleviate severe neuralgic pains. On leaving college he settled at Grasmere, Westmoreland, in the vicinity of Wordsworth and Southey, and devoted himself to literary work. Here or in London he remained till 1828, reading voraciously, and writing for the *London Magazine*, *Knight's Quarterly Magazine*, and afterward *Blackwood's Magazine*. From 1828 to 1840 he lived in Edinburgh, then removed with his family to Lasswade, which continued to be his headquarters. He died at Edinburgh in 1859. His writings, nearly all contributions to magazines, are distinguished by power of expression, subtle thought, and an encyclopædic abundance of curious information. He was eccentric in his habits, incapable of managing money matters, but amiable and polite.

Dera Ghazi Khan (der'a gä-zē' kän), a district and town in the Punjab, Hindustan. The former, which is in Derajat division, has an area of 4517 square miles and a pop. of 471,149. The town has a pop. of 23,731, half Hindus and half Mohammedans. It has extensive manufactures of silk, cotton and coarse cutlery.

Dera Ismail Khan (der'a ēs-mā-ēl' kän), a district and a town of Hindustan, in the Punjab, in the division of Derajat. The district lies north of that of Dera Ghazi Khan on both sides of the Indus, and has an area of 9296 square miles, and a pop. of 252,379. The town is a staple place for cotton goods. Pop. 31,737.

Derajat (-jät'), a division or commissionership of Hindustan, in the Punjab, occupying part of the valley of the Indus, and comprising Dera Ghazi Khan, Dera Ismail Khan and Bannu; area 22,315 sq. miles. It is well watered and fertile, and contains numerous towns and villages. Pop. 1,643,603, mostly Mohammedans.

Derbend, or DERBENT (der-bent'), a fortified Russian seaport city of the government of Daghestan, on the west shore of the Caspian, an ancient place formerly belonging to Persia. The manufactures consist of woolen stuffs, copper and iron ware, rose-water, etc.; and there is some trade in saffron, largely grown in the vicinity. Pop. 14,821.

Derby (der'bi, där'bi), a municipal and parliamentary borough in England, capital of Derbyshire, on the Derwent, here crossed by an elegant bridge of three arches, 115 miles N. N. W. London. It is pleasantly situated in a wide and fertile valley open to the south, and is well and regularly built

in the modern quarter. It has some fine public buildings, among which are the churches of All Saints, St. Alkmund and St. Werburgh, the county hall, school of art, infirmary, etc. There is also a very handsome free library and museum. The principal manufactures are silk, cotton, paper, articles in Derbyshire spar, castings, porcelain, etc. Derby is one of the oldest towns in the kingdom, and is supposed to owe its origin to a Roman station, Derventio, situated at Little Chester, on the opposite side of the river. Under the Danes it took the name of Deoraby. Richardson, the novelist, was a native of the town. Pop. 123,433.—The county of Derby, or Derbyshire, in the center of the kingdom, area, 1029 square miles, five-sixths being arable or in permanent pasture. The southern and eastern parts have a fertile soil, while the northwestern portion is bleak, with a rocky and irregular surface. Here is the loftiest range of the English Midlands, the mountains of the Peak. The Peak itself is 2000 feet high. The principal rivers are the Derwent, the Trent, the Wye, the Erwash, the Dove and the Rother. Oats and turnips are important crops, and dairy-husbandry is carried on to a large extent. Coal is abundant in various parts of the county, iron ore is also plentiful, and lead, gypsum, zinc, fluorspar, and other minerals are obtained. The manufactures are silk, cotton and lace, machinery and agricultural implements. Pop. (1911) 560,129.

Derby (der'bi), a city of New Haven Co., Connecticut, on the Housatonic River, 9 miles W. of New Haven. The principal industries are agriculture and the manufacture of pins, heavy castings, forgings, pianos, organs, hardware, machinery, etc. Pop. (1920) 11,238.

Derby, EDWARD GEOFFREY SMITH STANLEY, FOURTEENTH EARL OF, an English statesman, born at Knowsley Park, Lancashire, in 1799; died there in 1869. In 1820 he was returned to the House of Commons as member for Stockbridge. At first inclining to the Whig party, he joined Canning's ministry in 1827, and in 1830 became chief secretary for Ireland in Lord Grey's government, greatly distinguishing himself by his speeches in favor of the Reform Bill in 1831-32. The opposition led by O'Connell in the House of Commons was powerful and violent, but Stanley, while supporting a bill for the reform of the Irish Church and the reduction of ecclesiastical taxation, was successful in totally defeating the agitation for the repeal of the Union. He warmly advocated the abolition of slavery, and passed the act for this purpose in 1833; but in the following year a difference of opinion with his party as to the diversion of the surplus revenue of the Irish Church led him to

Edward, 14th Earl of Derby

join the Tories. In 1841 he became colonial secretary under Sir Robert Peel, but resigned on Peel's motion for repeal of the corn laws. In 1851 and 1858 he formed ministries, and again in 1866. Early in 1868 he resigned office. Earl Derby joined to greater ability as a statesman, and brilliant oratorical powers, a high degree of scholarly culture and literary ability.—EDWARD HENRY STANLEY, fifteenth earl of Derby, was born in 1826; educated at Rugby and Trinity College, Cambridge. In 1852 he was under secretary of foreign affairs; afterwards secretary of state for India. Under his superintendence the management of the British India empire was transferred from the East India Company to the government of Great Britain. In 1866 and also in 1874 he was secretary of state for foreign affairs. Lord Derby became a Liberal in 1879, and was secretary of state for the colonies under Mr. Gladstone from 1882 to 1885. He, however, took a stand against Irish Home Rule in 1886, and afterwards ranked among Gladstone's opponents. He died in 1893.

Derby, ORVILLE ADELBERT, geologist, was born at Kellogsville, New York, in 1851. He became an instructor of geology at Cornell University, resigned in 1875 to join the geological survey of Brazil, and has been chief of this survey since 1907. He is the highest authority in the geology and physical geography of

Brazil, on which he has written many valuable papers.

Derby Day (där'bi dā), the great annual London holiday, on which the horse-race for the stakes instituted by Lord Derby in 1780 is run. It always falls on a Wednesday. The race is run on Epsom Downs, an extensive plain in the neighborhood of London. The entry-money for each subscriber is fifty guineas, and the stakes are run for by colts of three years. The entries are so numerous that the value of the stakes reaches several thousand pounds. On Epsom Downs, on the Derby Day, are assembled all classes, high and low.

Derbyshire. See *Derby.*

Derbyshire Neck. See *Goiter.*

Derbyshire Spar. See *Fluorspar.*

Derecske (de-rech'ke), a town of Hungary, in the county of Bihar. Soda is obtained from the neighboring swamps. Pop. 8767.

Dereham (dēr'am), EAST, a town in England, nearly in the center of the county of Norfolk, with manufactures of agricultural implements, iron-foundries, and a brisk trade. The poet Cowper was buried in the church here. Pop. 5729.

Derelict (der'e-likt), a vessel or anything relinquished or abandoned at sea, but most commonly applied to a ship abandoned by the crew and left floating about.

Derg, LOUGH (loug derg); (1) a lake of Ireland, county of Donegal, about 3 miles long by 2½ broad at the broadest part, and studded with islets, one of which, called Station Island, has long been a great resort of Roman Catholic pilgrims; (2) an expansion of the river Shannon between County Tipperary and Counties Clare and Galway, about 24 miles long and averaging 2 miles in breadth.

Derham (der'am), WILLIAM, an English philosopher and divine, born in 1657; died in 1735. He was long rector of Upminster in Essex. His best-known works are entitled *Physico-Theology, Astro-Theology* and *Christo-Theology.*

Derivation (der-i-vā'shun). See *Etymology.*

Derma (der'ma), DERMIS, the true skin, or under layer of the skin, as distinguished from the cuticle, epidermis, or scarf-skin.

Dermatology (der-ma-tol'ō-ji), the branch of medicine which treats of the skin and its diseases.

Dermatophyte (der-mat'o-fit), a parasitic plant, chiefly of the lowest type of the Cryptogamia, infesting the cuticle and epidermis of men and other animals, and giving rise to various forms of skin-disease, as ringworm, etc.

Dermestes (der-mes'tez), a genus of coleopterous insects, one species of which (*D. lardarius*) is known by the name of bacon-beetle, and is often found in ill-kept ham or pork shops.

Dermot Mac Murragh (der'mot mak murra), the last Irish king of Leinster, attained the throne in 1140. Having carried off the wife of O'Ruarc, prince of Leitrim, he was attacked by the latter, and after a contest of some years driven out of Ireland (1167). He then did homage to the English king, and with the help of Richard, Earl of Pembroke, recovered his kingdom, but died in the same year (1170), and was succeeded by Pembroke, who had married his daughter.

Derna (der'na), a town in Barca, on the north coast of Africa. Pop. 7000.

Derrick (der'ik), a hoisting apparatus consisting of a single mast or pole, supported by stays or guys, to which a swinging boom with pulleys is attached, used in building construction, etc. Floating derricks of the strongest construction, with an immense boom and numerous blocks, are also used. The boom of the derrick is hinged at its connection with the mast, whereas the jib of the crane is fastened rigidly to the mast. It is impossible to wholly distinguish between cranes, derricks and derrick cranes.

Derry (der'i), a town of Rockingham Co., New Hampshire, 12 miles S. E. of Manchester. Here is the Pinkerton Academy. Among the manufactures are shoes, acetylene-gas machines, etc. Pop. (1920) 5382.

Derry. See *Londonderry.*

Dervish (der'vish), or DERVISE (Persian, poor), a Mohammedan devotee, distinguished by austerity of life and the observance of strict forms of worship. There are many different orders of them. Some live in monasteries, others lead an itinerant life, others devote themselves to menial or arduous occupations. They are respected by the common people, and the mendicants among them carry a wooden bowl into which the pious cast alms. One of their forms of devotion is dancing or whirling about, another is shouting or howling, uttering the name *Allah*, accompanied by violent motions of the body, till

they work themselves into a frenzy and sometimes fall down foaming at the mouth. They are credited with miraculous powers, and are consulted for the

Traveling Dervish of Khorasan

interpretation of dreams and the cure of diseases.

Derwent (der'went), the name of four rivers in England, in Derbyshire, Yorkshire, Durham and Cumberland, respectively, the last draining Derwentwater Lake. Also a river in Tasmania.

Derwentwater, or KESWICK LAKE, a beautiful lake in Cumberland, England, in the vale of Keswick. It is about 3 miles in length and 1½ in breadth, and stretches from Skiddaw on the north to the hills of Borrowdale. Near the northeast corner is the celebrated cascade of Lodore. Its waters are carried to the sea by the Derwent.

Derwentwater, JAMES RATCLIFFE, LAST EARL OF, one of the leaders in the rebellion of 1715, born at London in 1689. The standard of revolt having been raised in Scotland, Lord Derwentwater commenced the movement in England on October 6, 1715, but was forced, along with the other Jacobite nobles, to surrender at discretion on November 13th. He was executed on Tower Hill, February 24, 1716, his estates being confiscated, and in 1735 granted to Greenwich Hospital.

Derzhawin (d e r-zh ä'vin), GABRIEL ROMANOWITCH, a Russian lyric poet, born in 1743. He entered the army as a private soldier, distinguished himself highly, and was eventually transferred to the civil service, in which he obtained the highest offices. In 1803 he retired from public life and devoted himself entirely to poetry. One of his most beautiful poems is the *Oda Bog*, or *Address to the Deity*. He died in 1816.

Desaguadero (d e s-ä-g w ä-dä'rō), a river of Bolivia, in a valley of the same name, issuing from Lake Titicaca, and carrying its waters into Lake Aullagas. Also a river in the Argentine Confederation flowing into Lake Bevedero Grande, and separating the provinces of San Juan and Mendoza. Desaguadero signifies in Spanish 'a channel of outlet.'

Desaix de Veygoux (dė-sā dė vā-gō), LOUIS CHARLES ANTOINE, a distinguished French general, born in 1768 at St. Hilaire d'Ayat, in Auvergne. He was of noble family, and entered the army as a sublieutenant. He distinguished himself greatly in 1794 under Pichegru, and two years later with the army of the Rhine under Moreau. In 1797 he accompanied Bonaparte to Egypt, and was very successful in reducing Upper Egypt. After the Treaty of El Arish he followed Bonaparte to Italy, took command of the corps of reserve, and, arriving on the field of Marengo at a critical moment, decided the victory by a brilliant charge, June 14, 1800. He himself fell, mortally wounded by a cannon shot.

Desault (dė-sō), PIERRE JOSEPH, one of the most celebrated surgeons of France, was born in 1744, and died in 1795. After some experience in the military hospital at Béfort he went to Paris in 1764, studied under Petit, and two years afterwards became a lecturer on his own account. His reputation soon increased, and he became principal surgeon in the hospital De la Charité, and in 1788 was put at the head of the great Hôtel Dieu in Paris. Here he founded a surgical school, in which many of the most eminent surgeons of Europe were educated.

Descant (des'kant), in music, an addition of a part or parts to a subject or melody, a branch of musical composition which preceded the more modern counterpoint and harmony, coming into existence at the end of the eleventh or beginning of the twelfth century.

Descartes (dā-kärt), RENÉ, a great French philosopher and mathematician, with whom the modern or new philosophy is often considered as commencing, was born March 31, 1596, at La Haye, in Touraine. He was educated at the Jesuit College of La Flèche, where he showed great talent.

He entered the military profession and served in Holland and in Bavaria. In 1621 he left the army, and after a variety of travels finally settled in Holland, and devoted himself to philosophical inquiries. Descartes, seeing the errors and inconsistencies in which other philosophers had involved themselves, determined to build up a system anew for himself, divesting himself first of all the beliefs he had acquired by education or otherwise, and resolving to accept as true only what could stand the test of reason. Proceeding in this way he found (*Meditationes de Prima Philosophia*) that there was one thing that he could not doubt or divest himself of the belief of, and that was the existence of himself as a thinking being, and this ultimate certainty he expressed in the celebrated phrase '*Cogito, ergo sum*' (I think, therefore I am). Here, then, he believed he had found the test of truth. Starting from this point Descartes found the same kind of certainty in such propositions as these: that the thinking being or soul differs from the body (whose existence consists in space and extension) by its simplicity and immateriality and by the freedom that pertains to it; that every perception of the soul is not distinct; that it is so far an imperfect finite being; that this imperfection of its own leads it to the idea of an absolutely perfect being; and from this last idea he deduces all further knowledge of the truth. Descartes also contributed greatly to the advancement of mathematics and physics. The higher departments of geometry were greatly extended by him. His system of the universe attracted great attention in his time, though long since exploded. It rested on the hypothesis of celestial *vortices*, immense currents of ethereal matter, by which he accounted for the motion of the planets (*Principia Philosophiæ*, 1644). His works effected a great revolution in the principles and methods of philosophizing. In 1647 the French court granted him a pension of 3000 livres, and two years later, on the invitation of Christina of Sweden, he went to Stockholm, where he died in 1650.

Descent (d e-s e n t'), in law, is the transmission of the right and title to lands to the heir, on the decease of the proprietor, by the mere operation of law. The rule determining to whom an estate belongs, on the decease of the proprietor, is that of consanguinity, or relationship by blood, though with some exceptions, as in the case of the portion, or the use of a portion, of a man's property given by the laws to his widow. The rules of descent, designating what relations shall inherit, and their respective shares, will be determined by the genius and policy of the government and institutions. Hence the practice of entailments in the feudal system. And wherever the government is founded in family privileges, or very intimately connected with them, as is the case in all governments where the hereditarily aristocratical part of the community have a great preponderance, the sustaining of families will very probably be a characteristic feature in the code of laws. Thus, in Britain, all the lands of the father, unless otherwise directed by will, go to the eldest son. In the United States of America this distinction in favor of the eldest son has been abolished, and the laws there are founded upon the principle of equal distribution both of real and personal estate among heirs of the nearest surviving degree. Kindred in blood are divided into three general classes, viz. 1, descendants; 2, ancestors; 3, collateral relatives, that is, those who have descended from the same common ancestor. The civil law computes the degrees by counting the generations up to the common ancestor, as father, grandfather, great-grandfather; or mother, grandmother, great-grandmother; and from him or her down to the collateral relative, as brother, cousin, etc., making the degree of relationship the sum of these two series of generations. Every person has two sets of ancestors, the paternal and maternal, and therefore two sets of collateral relatives. There is also a distinction of collateral kindred, into those of the whole blood and those of the half blood.

Deschanel (de-shâ-nel'), PAUL EUGENE LOUIS, president of the French Republic, born in Brussels, 1856. He was president of the Chamber of Deputies 1898-1902 and 1912-19. In 1920 he succeeded Poincaré as president of the Republic.

Desert, GREAT AMERICAN. See *Arid Region*.

Desert (dez'ert), a term more particularly applied to vast barren plains such as are found in Asia and Africa, but which may also be used to designate any solitude or uninhabited place whether barren or not. See *Sahara* and *Gobi*.

Deserter (d e-z ê r' t e r), a soldier or sailor who quits the service without leave. Deserters are tried by court-martial, which may inflict death as the extreme punishment, or a less severe punishment, according to the circumstances of the case.

Desertion (de-zėr'shun), by husband or wife, without due cause, is in England ground for a judicial separation. A wife may obtain an order to protect any money or property she may have acquired since desertion, against her husband or his creditors. Desertion in most of the states of the Union constitutes a ground of divorce, though they differ as to the period of time which must elapse before action can be brought.

Desful. See *Dizful.*

Deshoulières (dā-sōl-yār), ANTOINETTE DU LIGIER DE LAGARDE, a French lady of much literary reputation in the seventeenth century; born in 1634; died in 1694. She was the center of attraction in the best circles of the period, and was elected a member of several learned societies. Among her works are odes, eclogues, idyls, and a tragedy, *Genseric.*

Desiccation (des-i-kā'shun), a process of dispelling moisture by the use of air, heat, or chemical agents, such as chloride of calcium, quicklime, oil of vitriol and fused carbonate of potash.—*Desiccation cracks,* in geology, are the fissures caused in clayey beds by the sun's heat, and seen in various rock strata.

Design (d e-z I n'), thought, arrangement, or grouping, imagination or invention in works of art. A design is a composition or invention, pictorial, architectural, or decorative. It may be simply an imperfect sketch, as a record of a first thought; or it may be a fully matured work, as a cartoon in preparation for fresco painting, or a drawing to illustrate a book.

Design, SCHOOLS OF, schools where art is taught in relation to its industrial application rather than its esthetic side. They may be regarded as intermediate between schools of technology, in which the designing is of strictly mechanical nature, architecture excepted, and schools for the training of artists who devote themselves to the fine arts. The courses in the schools of design vary in detail, but generally include free-hand drawing; the theoretical principles of decoration and the history of art, especially in its decorative aspect; copying and variation of designs; original designing for textile fabrics, wall-paper, stained-glass, pottery, leather work, book covers, etc.; and the study of the best examples of designing. To this is added instruction in technical manipulation. The impetus to promote the development of the art industries of the country originated in Boston in 1870. The Centennial Exhibition of 1876 further strengthened the movement. Various institutions of learning established courses in applied art, among them being Cooper Union; the Lowell Free School affiliated with the Massachusetts Institute of Technology; the School of Design for Women, in Philadelphia; the School of Industrial Art of the Pennsylvania Museum, also of Philadelphia. In Europe many schools are devoted to instruction in design, and the teaching for the blind and the deaf and dumb has reached a high development.

Desman (des'man). See *Musk-rat.*

Desmidiaceæ (des-mid-i-ā'se-ē), DESMIDIE'Æ, a nat. order of microscopic, fresh-water, confervoid Algæ. They are green gelatinous plants composed of variously forced cells having a bilateral symmetry, which are either free, or in linear series, or collected into bundles or into starlike groups, and imbedded in a common gelatinous coat. Desmidiaceæ differ from Diatomaceæ in their green color and absence of silex.

Desmodium (des-mō'di-um), a genus of plants. See *Moving Plant.*

Des Moines (dė moin), a manufacturing and trading city, capital of the State of Iowa and of Polk County, on the Des Moines River, about 340 miles west of Chicago. Among its chief buildings are the new State house, the State arsenal, colleges, opera houses, a regimental post of the U. S. A., etc. It is the seat of Drake University, the leading educational institution of the Church of Christ, Highland Park College (Presbyterian), and the Danish Lutheran Theological School. There are coal-mines in the vicinity, and the manufactures are rapidly increasing. The industries include important pork-packing establishments and bridge-building works. It was made the State capital in 1855, and was one of the first cities to adopt commission form of government. Pop. (1900) 62,139; (1910) 86,368; (1920) 126,468.

Des Moines College, established at Des Moines, Iowa, in 1865 by Baptists, and affiliated with the University of Chicago in 1892. In 1920 it had 22 instructors, 550 students.

Des Moines River, the most important river in Iowa, rises in Minnesota and joins the Mississippi 3 miles below Keokuk. It is about 550 miles long and drains an area of 14,500 sq. miles.

Desmoulins (dā-mö-laṇ'), BENOIT CAMILLE, born in 1760

or 1762, was conspicuous during the first period of the French revolution. He was among the most notable of the pamphleteers and orators who urged the mutlitude forward in the path of revolution. Having become closely connected with Danton and the party of opposition to Robespierre, and inveighing against the reign of blood and terror, he was arrested on the order of the latter on March 30, 1794, tried on the 2d of April, and executed on the 5th.

Desna (dyes-nä'), a river in Russia, which rises in the government of, and about 50 miles east of the town of Smolensk, flows through the governments of Orel and Tchernigov till it joins the Dnieper near Kiev. It is 500 miles in length and navigable nearly throughout.

De Soto (dē sō'tō), HERNANDO, a Spanish explorer and discoverer of the Mississippi, born about 1496; died in 1542. He accompanied expeditions to the New World under Davila and Pizarro, and played a distinguished part in the conquest of Peru. In 1539 he led an expedition to Florida, whence after many difficulties he penetrated to and beyond the Mississippi. Here he was attacked with fever and died.—The name De Soto has been given to a county in the N. W. of Mississippi, in the locality of his discovery of the Mississippi River.

De Soto, a city of Jefferson Co., Missouri, 43 miles S. by W. of St. Louis. Lead, zinc and tiff ore are produced in the vicinity, and it has railroad machine shops, a large shoe factory. Exports grain, lead and tiff. Pop. 5003.

Despot (des'pot; Greek, *despotēs*), originally a master, a lord; at a later period it became an honorary title which the Greek emperors gave to their sons and sons-in-law when governors of provinces. At present *despot* means an absolute ruler, as the Emperor of Russia, and in a narrower sense a tyrannous one.

Dessalines (dā-sà-lēn), JEAN JACQUES Emperor of Hayti, born in Africa about 1760, was a slave in 1791, when the insurrection of the blacks occurred in that island, but was set free along with the other slaves in St. Domingo in 1794. His talents for war, his courage, and unscrupulous conduct raised him to command in the insurrections of the colored people, and after the deportation of Toussaint L'Ouverture, and the subsequent evacuation of the island by the French, Dessalines was appointed governor-general for life with absolute power; and the year following (1804) was declared emperor with the title of Jacques I. But his rule was savage and oppressive, and, October 17, 1806, he was slain by one of his soldiers.

Dessau (des'ou), a town in Germany, capital of the duchy of Anhalt, in a beautiful valley on the left bank of the Mulde, mostly well built, with fine squares and many handsome buildings. The manufactures consist of woolens, woolen yarn, carpets, machinery, tobacco, etc. Pop. 55,134.

De Stendhal. See *Beyle, Marie-Henri.*

Desterro (des-ter'ō), now FLORIANAPOLIS, a seaport of Brazil, capital of the province of Santa-Catharina. The harbor is, next to that of Rio de Janeiro, the best on the Brazilian coast. Pop. 30,687.

Destroyer. A small, well-armed and very fast war-vessel originally designed to overtake and destroy torpedo boats (which see), but in the European war employed for navy scout duty and for the destruction of submarines and other minor naval work.

Destutt de Tracy (dā-tü de trà-sē). ANTOINE LOUIS CLAUDE, a French philosophical writer, born in 1754, of a family of Scottish extraction; died in 1836. As a philosopher he belonged to the Sensationalist school, and considered all our knowledge to be derived originally from sensation. Among his chief works are *Idéologie* (1801), *Logique* (1805), *Traité de la Volonté* (1815).

Detachment (de-tach'ment), a body of troops selected from the main army for some special service.

Detaille (dā-tà'y), JEANNE BAPTISTE EDOUARD, a French military and historical painter, born in Paris, October 5, 1848; died there, December 24, 1912. He was a pupil of Meissonier.

Determinism (de-tẽr'min-izm), a philosophical theory which holds that the will is not free, but is invincibly determined either—according to the older form of the theory—by a motive furnished by Providence, or—according to the modern form—by the aggregation of inherited qualities and tendencies.

Detinue (det'i-nū), in law, the form of action whereby a plaintiff seeks to recover a chattel personal unlawfully detained.

Detmold (det'mōld), a town of Germany, capital of Lippe-Detmold, on the left bank of the Werra, 50 miles southwest of Hanover, with a new and an old palace (or castle), good public library, museum, etc. In the vicinity a

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GRAND CIRCUS PARK, DETROIT

A picturesque view in one of the greatest of American cities, now the fourth in population in the United States.

colossal statute has been erected to the famous warrior Hermann or Arminius who overthrew the Roman general Varus and his legions in a battle which was fought near this place. Pop. 13,164.

Detonating Powders (d e t'u-nāt-ing), certain chemical compounds which, on being exposed to heat or suddenly struck, explode with a loud report, owing to one or more of the constituent parts, suddenly assuming the gaseous state. The chloride and iodide of nitrogen are very powerful detonating substances. The compounds of ammonia with silver and gold, fulminate of silver and of mercury detonate by slight friction, by means of heat, electricity, or sulphuric acid.

Detonating Tube, a species of eudiometer, being a stout glass tube used in chemical analysis for detonating gaseous bodies. It is generally graduated into centesimal parts, and perforated by two opposed wires for the purpose of passing an electric spark through the gases which are introduced into it, and which are confined within it over mercury and water.

Detroit, (dē-troit'), the metropolis of Michigan, situated on the Detroit River, which passes more tonnage than any other waterway in the world, sometimes exceeding 100,000,000 actual freight tons in a single season. The city has a frontage of 11 miles on Detroit River and 4 miles on the River Rouge, a navigable estuary. Its railroad transportation facilities are covered by five lines of the Michigan Central system, four of the Grank Trunk, three of the Pere Marquette, and one each of the Pennsylvania, Wabash, Lake Shore, Canadian Pacific, Detroit, Toledo & Ironton and Detroit & Toledo Short Line. It is a prosperous and beautiful city, with wide streets, 31 parks, the largest being 705 acres in extent, and a boulevard, 12 miles long, encircling the central portion of the city. Its principal public buildings are the Federal Building, City Hall and County Building. It has a large number of office buildings, public library with 12 branches, and 140 public school buildings. Its largest interests are manufacturing, with nearly 3000 establishments, employing 310,000 persons and with an output in 1919 valued at $1,450,000,000. The automobile factories alone have 140,000 employes and in 1919 put out 1,100,000 cars. Other large branches of manufacture are adding machines, aluminum castings, brass products, pharmaceutical preparations, soda ash, stoves, meat packing and tobacco products. Detroit was settled by the French in 1701, was captured by the British in 1760 and was surrendered to the United States in 1796. Pop. (1900) 285,704; (1910) 465,766; (1920) 993,739, with Hamtramck district and Highland Park, 1,088,943. It is now the fourth city in population in the United States.

Detroit River, or STRAIT OF ST. CLAIR, a river or strait of North America, which runs from Lake St. Clair to Lake Erie. It is 28 miles long, and of sufficient depth for the navigation of large vessels. It is about ¾ mile wide opposite Detroit and enlarges as it descends. An immense lake trade passes through it.

Dettingen (det'ing-en), the name of several places in Germany, among which is a village of Bavaria, on the right bank of the Main, famous for the victory gained by the English and Austrians under George II of England over the French in 1743.

Deucalion (dū-kā'li-on), in Greek mythology, the son of Prometheus and father of Hellen, ancestor of the Hellenes. According to tradition, he saved himself and his wife, Pyrrha, from a deluge which Zeus had sent upon the earth by building a ship which rested upon Mount Parnassus. To repair the loss of mankind they were directed by an oracle to throw stone behind them, which became men and women.

Deus ex Machinâ (mak'i-na; L. 'a god out of the machine'), a phrase used to designate the resorting to supernatural causes to explain phenomena that one is not able to account for by natural means. The phrase is taken from the practice on the classical stage of introducing a god from above by means of some mechanical contrivance in order to effect a speedy dénouement of the plot.

Deuterocanonical (dū'ter-ō-), a term applied to those books of Scripture that were admitted into the canon after the rest, some of them being regarded by Protestants as apocryphal.

Deuteronomy (dū-ter-on'u-mi), the last of the books of the Pentateuch, so called (Greek, *deuteros*, second; *nomos*, a law) from its consisting in part of a restatement of the law as already given in Exodus, Leviticus and Numbers, and containing also, in addition to special commands and admonition not previously given, an account of the death of Moses. See *Pentateuch*.

Deutz (doits), formerly a town of Prussia, now included in the city of Cologne. It lies on the right bank of the river and is connected with Cologne proper by bridges. It was strongly fortified as part of the defenses of Cologne, forming a bridgehead. It has porcelain, glass and other manufactures.

Deutzia (dūt'zi-a), a genus of plants, of the saxifrage family, which produce beautiful white flowers. They are small shrubs indigenous to China and Japan and Northern India.

Deux-Ponts (deu-pōn; 'two bridges'), the French name for the town of Zweibrucken (q. v.).

De Valera (dē va-lē'ra), EAMON, an Irish statesman, born in New York in 1883; his father was Spanish, his mother Irish. He was graduated from the University of Ireland and was Sinn Fein member of Parliament from East Clare from 1917. He was elected President of the Irish 'Republic' in 1919.

Devanagari (dā-va-nä'ga-rē), a name of the Sanskrit alphabet.

Development Theory. See *Evolution.*

Deventer (dāv'en-tėr), an old town in Holland, province of Overijssel, 8 miles north from Zutphen, at the confluence of the Schipbeek and Ijssel. Its industries embrace carpets, cast-iron goods, printed cottons, hosiery, and a kind of cake called Deventer cake. It has a large export trade in butter. Pop. 26,212.

De Vere (de-vēr), AUBREY THOMAS, an Irish poet, born in County Limerick in 1814; died in 1902. He was the son of Sir Aubrey de Vere, a poet and dramatist (1788-1846). Educated at Trinity College, Dublin, he engaged in literary work, publishing *Irish Odes* and other volumes of poems, also *Picturesque Sketches of Greece and Turkey, Recollections by Aubrey de Vere,* etc.

Deveron (dev'e-ron), a river of Scotland belonging to Aberdeenshire and Banffshire, 60 miles long.

Deviation of the Compass, the variance of a ship's compass from the true magnetic meridian, caused by the near presence of iron. In modern ships, in which iron is largely used in construction, and especially in battleships, deviation of the compass is a serious source of trouble, one difficult to overcome, and calling for various and complex arrangements of this directive implement. The gyro-compass is now much employed for this purpose, the principle of magnetic attraction being replaced by the effect of rapid rotation. In this the compass is inclosed in a vacuum and rotating at great speed produces inertia, the revolving body vigorously retaining the direction of its axis of movement while at the same time it tends to assume that of the earth's axis, so that its line of whirl becomes the same as that of the earth, pointing in the same direction as the magnet. The gyro-compass is now used on all commercial ships, battleships and submarines. It points to the true pole and with a force much stronger than that of the magnet.

Device (de-vīs'), a name common to all figures, ciphers, characters, rebuses, mottoes, etc., which are adopted by a person or a family by way of badge or distinctive emblem, often a representation of some natural body, with a motto or sentence applied in a figurative sense.

Devil (dev'il; Greek, *diabolos,* a slanderer or accuser), in theology, an evil spirit or being; especially the evil one, represented in Scripture as the traducer, father of lies, etc. Most of the old religions of the East acknowledge a host of devils. The doctrine of Zoroaster, who adopted an evil principle called Ahriman, opposed to the good principle and served by several orders of inferior spirits, spread the belief in such spirits among the people. The Greek mythology did not distinguish with the same precision between good and bad spirits. With the Mohammedans *Eblis,* or the devil, was an archangel whom God employed to destroy a pre-Adamite race of *jinns,* or genii, and who was so filled with pride at his victory that he refused to obey God. The Satan of the New Testament is also a rebel against God. He uses his intellect to entangle men in sin and to obtain power over them. But he is not an independent self-existent principle, like the evil principle of Zoroaster, but a creature subject to omnipotent control. The doctrine of Scripture on this subject soon became blended with numerous fictions of human imagination, with the various superstitions of different countries, and the mythology of the pagans. The excited imaginations of hermits in their lonely retreats, sunk as they were in ignorance and unable to account for natural appearances, frequently led them to suppose Satan visibly present; and innumerable stories were told of his appearance, and his attributes—the horns, the tail, cloven foot, etc.—distinctly described. In consequence of the cures which Christ and his apostles performed on the possessed, the early church be-

lieved in a power connected with the consecration of priests to drive out evil spirits. (See *Exorcism.*) The belief in evil spirts, witches, etc., was in the seventeenth century so common that they became the objects of judicial process. With the progress of the natural sciences, however, in the eighteenth century many wonderful phenomena became explained, and less was heard of witchcraft.

Devil, the machine through which cotton or wool is first passed to prepare it for the carding-machines; a teasing-machine.

Devil, TASMANIAN. See *Dasyure.*

Devil-fish, the popular name of various fishes, one of them being the angler (which see). Among others the name is given to several large species of ray occasionally captured on the Atlantic and Pacific coasts of America, and much dreaded by divers, whom they are said to devour after enveloping them in their vast wings. During gales of wind or from strong currents these immense fish are driven into shoal water, and being unable to extricate themselves, fall an easy prey to the vigilance of the fisherman, who obtain considerable quantities of oil from their livers.

Devil's Advocate. See *Advocatus Diaboli.*

Devil's Bit, the common name of a species of scabious (*Scabiosa succisa*), nat. order Dipsaceæ. It has heads of blue flowers nearly globular, and a fleshy root, which is, as it were, cut off abruptly. See *Scabious.*

Devil's Bridge (Teufelsbrücke), a bridge in Switzerland built over the Reuss, from mountain to mountain, on the road over St. Gothard.

Devil's Coach Horse. See *Rove Beetles.*

Devil's Island, a small rocky island off French Guiana. Here Dreyfuss (q. v.) was confined.

Devil's Lake, a city, county seat of Ramsey Co., North Dakota, 90 miles w. of Grand Forks, on a lake of the same name. It has creameries, car shops, etc. Here is the State school for the deaf. Pop. 5140.

Devil's Punchbowl, a small lake of Ireland, near the Lakes of Killarney, between 2000 and 3000 feet above the sea.

Devil's Wall, in the south of Germany, a structure which was originally a Roman rampart, intended to protect the Roman settlements on the left bank of the Danube and on the right bank of the Rhine, against the inroads of the Teutonic and other tribes. Remains of it are found from the Danube, in Bavaria, to Bonn on the Rhine.

Devil-worship, the worship paid to the devil, an evil spirit, a malignant deity, or the personified evil principle in nature, by many of the primitive tribes of Asia, Africa and America, under the assumption that the good deity does not trouble himself about the world; or that the powers of evil are as mighty as the powers of good, and have in consequence to be bribed and reconciled. There is a sect called devil-worshipers inhabiting Turkish and Russian Armenia and the valley of the Tigris, who pay respect to the devil, to Christ, and to Allah or the supreme being, and also worship the sun.

Devise (de-vīz'), in law, usually the disposition of real estate by will, but also sometimes applied to any gift by will, whether of real or personal estate.

Devizes (de-vī'zez), a town in England, county of Wilts, finely situated on a commanding eminence, 82 miles west by south of London. The name is derived from the Latin *divisæ terræ,* ('divided lands'), because the ancient castle of Devizes was built at the meeting-place of three different manors. Agricultural engines and implements are made, and malting is carried on. Pop. (1911) 6741.

Devon, DEVONSHIRE (dev'un-shêr), a maritime county in the s. w. of England, its northern coast being on the Bristol Channel and its southern on the English Channel; area, 2586 square miles, the county being the third largest of England. From Exeter to the confines of Cornwall extends the wide and barren tract called Dartmoor; but the vale of Exeter, comprising from 120,000 to 130,000 acres, and the south extremity of the county called *South Hams,* limited by a line drawn from Torbay to Plymouth Sound, are among the most fertile districts of England. Tin, lead, iron, copper, manganese, granite and the clay used by potters and pipemakers are the chief mineral products. The geological formation of the Old Red Sandstone is so largely developed that the term Devonian has to some extent become its synonym. Agriculture is in a somewhat backward state, owing, probably, to the general preference given to dairy husbandry, for which the extent and richness of its grass lands make the county most suitable. Wheat, barley, beans, peas and potatoes are the principal crops. About three-fourths of the county are under crops or

in pasture. There is a large trade in butter, cheese, and live stock and the 'clotted' cream and cider of Devonshire are well known as specialties of the county. Pop. (1911) 701,981.

Devonian System (de-vō'ni-an), in geology, a name originally given to rocks of Devonshire and Cornwall, intermediate between the Silurian and Carboniferous strata, and consisting of sandstones of different colors, calcareous slates and limestones, etc. They are divided into lower, middle and upper groups, all containing fossils, but the middle most abounding in them, including corals, crinoids, crustaceans, mollusca (especially brachiopods), and cephalopods. Devonian rocks occupy a large area in Central Europe, as well as in the United States, Eastern Canada and Nova Scotia. The term has been often used as equivalent to Old Red Sandstone.

Devonshire, VICTOR CHRISTIAN WILLIAM CAVENDISH, 9th DUKE OF (1868-), Governor General of Canada from 1916. He was Member of Parliament from 1891 to 1908; financial secy. to the Treasury, 1903-05.

Devonshire. See *Devon.*

Dew (dū) is a deposition of water from the atmosphere upon the surface of the earth in the form of minute globules. The earth absorbs heat during the day; at sunset its supply is cut off, but the radiation continues. Grass and foliage, being radiators, lose their heat, and the moisture of the atmosphere is condensed by contact therewith. See *Dew-point.*

Dewas (dā-wäs'), a state of Central India. Pop. 142,162. Its capital, of the same name, has a pop. of 15,000.

De Wet, CHRISTIAN RUDOLF, born in 1854, was the chief commandant of the Orange Free State army during the Boer War (1899-1902). In this long-drawn-out contest he distinguished himself by great ability and daring. Though many efforts were made to capture him, he always succeeded in outwitting his pursuers, General Roberts and Kitchener, and at the end of the war was still at large. His book, *Three Years of War*, was published in 1902.

Dewey, GEORGE, naval officer, born in Vermont, in 1837, appointed to the Naval Academy in 1854. On the outbreak of the Civil war, he was commissioned as lieutenant and assigned to the *Mississippi*, which, under Farragut, took part in forcing the Mississippi River. This vessel running aground in March, 1863, and being exposed to a hot Confederate fire, Dewey fired her and escaped with the crew. He took part in the two attacks on Fort Fisher, and continued in active service after the war, being made captain in 1884. In 1885 he was sent to command the flagship *Pensacola*, European squadron, and in 1888 was appointed Chief of Bureau of Equipment and Recruiting, with the rank of commodore. Commissioned commodore in 1896, he was placed in 1898 in command of the Asiatic squadron, and on May 1, after the declaration of war against Spain, fought the Battle of Manila, silencing the forts and destroying the Spanish fleet, without the loss to himself of a man or ship. On May 11, Congress unanimously adopted a resolution of thanks, granted him a sword of honor and placed him on the active list as rear-admiral. On August 13, he, in conjunction with General Merritt, attacked Manila, reduced it and took possession. In February, 1899, he was given the rank of admiral, previously borne only by Farragut and Porter. He died Jan. 16, 1917.

Dewey JOHN, an American psychologist and educator, born in Burlington, Vermont, October 20, 1859. He studied at the University of Vermont and Johns Hopkins University, and has held the position of professor of philosophy in the Universities of Michigan, Minnesota, Columbia and Chicago. His published works include *Psychology* (1886), *Study of Ethics* (1894), *School and Society* (1899), *Studies in Logical Theory* (1903). He is generally considered as the pioneer of the pragmatic movement in America.

Dewberry (dū'bėr-i; *rubus cæsius*), an edible fruit belonging to the order Rosaceæ, and to the same genus as the bramble. The American dewberry (*rubus Canadensis*) derives this name from the dew-like bluish bloom which covers the fruit. It abounds in dry, stony fields from Canada to Virginia, as a running plant, which bears a larger and sweeter berry than the common blackberry.

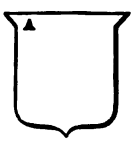
De Witt, JAN, grand-pensionary of Holland, celebrated as a statesman and for his tragic end, was the son of Jacob de Witt, burgomaster of Dort, and was born in 1625 or 1632. He became the leader of the political party opposed to the Prince of Orange, and in 1652 was made grand-pensionary. In 1665 the war with England was renewed and conducted by De Witt with great ability till its termination in 1665. In 1672 Louis XIV invaded the Spanish

Netherlands and involved. Holland in war. De Witt's popularity, already on the decline, suffered still further in the troubles thus occasioned, and he felt it necessary to resign his office of grand-pensionary. At this time his brother Cornelius, who had been tried and put to torture for conspiring against the life of the young Prince of Orange, lay in prison. Jan de Witt went to visit him, when a tumult suddenly arose among the people, and both brothers were murdered, August 20, 1672. De Witt was a man of high character, simple and modest in all his relations.

Dew-point, the temperature at which condensation of the vapor in the air takes place. When the temperature of the air has been reduced by radiation to the dew-point, dew is deposited and an amount of heat set free which raises the temperature of the air. Thus the dew-point will indicate what the minimum temperature of the night is likely to be, a knowledge of which is useful to the horticulturist.

Dewsbury (dūz'bėr-i), a town of England, in the West Riding of Yorkshire, and 30 miles south-west of the town of York, chiefly engaged in the manufacture of heavy woolen cloths, including blankets, carpets, rugs, flannels, baizes, etc. Pop. (1911) 53,358.

Dexter (deks'tėr), a term meaning on the right-hand side, chiefly used in heraldry. The *dexter chief point* is a point in the right-hand upper corner of the shield, being in the dexter extremity of the chief.



A. Dexter chief point.

Dextrine (deks'trin; $C_6H_{10}O_5$), the soluble or gummy matter into which starch can be converted by the action of dilute acids or malt extract, or by heat. It is remarkable for the extent to which it turns the plane of polarization to the right hand, whence its name. Its composition is the same as that of starch. By the action of hot diluted acids dextrine is finally converted into grape-sugar. It is white, insipid, and without smell. It is a good substitute for gum-arabic in medicine.

Dextro-Compounds (deks'trō), bodies which cause the plane of a ray of polarized light to rotate to the right. Dextrine itself, dextroglucose, tartaric acid, malic acid, cinchonine, and many other bodies have this property; while others, which have the opposite effect, of causing te plane to rotate to the left, are called *lævo-compounds.*

Dextrose (deks'trōs), a name for grape-sugar (which see).

Dey (dā), a title formerly assumed by the rulers (under the Turkish Sultan) of Algiers, Tripoli and Tunis.

Dezful (dēz'fōl). See *Dizful.*

Dhalak (dhà-làk'), an archipelago of the Red Sea, off the coast of Abyssinia. It consists of nearly 100 rocks and islets, mostly uninhabited, clustering round the island of Dhalak el-Kebir, which is about 35 miles long by 30 broad. This island possesses a pearl-fishery.

Dhar (dhär), a small native state in Central India, with an area of about 1740 square miles. The soil is fertile, and yields wheat, rice, opium, etc. Pop. (1901) 142,115. The capital is of the same name, is surrounded by a mud wall, and has some striking buildings. Pop. (1901) 17,792.

Dharangaon (dăr-an'ga-on), a town of Hindustan, in Khandesh district, Bombay. Pop. 14,000.

Dharapuram (dăr-a-pu'ram), a town of Hindustan, Coimbatore district, Madras. Pop. 8000.

Dharmkot (dărm'kot), a town of India, in Firozpur district, Punjab. Pop. 6000.

Dharmsala (dărm'sa-la), a hill station with military cantonments, in Kangra district, Punjab, India. Pop. 6971.

Dharwar (dăr-wär'), the chief town of Dharwar district, in the Bombay Presidency, Hindustan, a straggling place with some trade. There is a fort well planned and strongly situated, but now falling into ruins, and military cantonments at 2 miles' distance. Pop. 31,279. The Dharwar district has an area of 4535 square miles; pop. (1901) 1,113,298.

Dhole (dōl), the Cingalese name for the wild dog of India (*Cyon dukhuensis*). It is distinguished from the genus *Canis*, or dog proper, by its having one molar fewer in either side of the lower jaw. It is of a fox-red or rufous-fawn color, in size between a wolf and a jackal, and hunts always in packs.

Dholera (dhō-lā'ra), a seaport of Hindustan, Bombay Presidency, one of the chief cotton-marts in the Gulf of Cambay. Pop. about 10,000.

Dholka (dōl'ka), a town of Hindustan, Bombay Presidency, probably one of the oldest towns in Gujarat. Pop. about 15,000.

Dholpur (dōl'pŏr), a native state of Central India, Rajputâna; (1901) 270,973.

Dhulia (dō'le-ä), a town of Hindustan, Khandesh district, Bombay Presidency. Pop. about 25,000.

Dhurra, DOURAH (dų'ra), East Indian millet, the seed of *Sorghum vulgâre*, largely grown in India and after wheat the chief cereal crop of the Mediterranean region, being largely used in those countries by the laboring classes for food. Varieties are grown in many parts of Africa, one of them known as Kaffir corn. It does not make good bread, but is excellent for puddings and is prepared for food in various ways. The plant is closely allied to the sugar cane and is cultivated in the United States as a source of sugar.

Diabase (dī'a-bās), a diorite or greenstone, a fine-grained, crystalline-granular rock.

Diabetes (dīa-bē'tez), a disease of which the most remarkable symptoms are: a great increase in the quantity of urine, a voracious appetite, a stoppage of the cutaneous perspiration, thirst, emaciation, and great muscular debility. In true diabetes (*diabetes mellītus*) the composition of the urine is also greatly affected, an abundance of saccharine matter (diabetic sugar) being found in it. This disease usually attacks persons of a debilitated constitution and often without any obvious cause. Tea, coffee, dry wines, spirits and bitter ale may be drunk. Milk should be taken only sparingly. The disease is essentially a chronic one, though it may quickly end in death. Research and experiment in the Rockefeller Institute of Medical Research have resulted in the discovery that diabetes is due to a defect in the operation of the pancreas, causing the development of excess dextrose, a form of sugar, in the blood. Among the drugs employed by physicians in attempts to combat the disease are bromides and salicylates, arsenic and opium. Some success has been achieved by reducing the diet to a minimum and starving out the disease. Carbohydrates or foods containing starch are eliminated from the patient's diet and a normal supply of fats and proteins alone is allowed. Diseases of the lungs are apt to attack a diabetic person and must be carefully guarded against. Consult Allen's *Glycosuria and Diabetes*.

Diabetic Sugar (dī-a-bĕt'ik), the sweet principle of diabetic urine. It is identical with starch-sugar, grape-sugar, etc. It is not a constituent of normal urine, but in diabetes it may be present to the amount of 8 or 10 per cent., and in some cases more.

Diablerets (dya-ble-rā), LES, a mountain group of the Bernese Alps, Switzerland, between Canton Vaud and Canton Valais. The highest peak has a height of 10,620 feet.

Diacaustics (dī-a-kas'tiks). See *Caustic* (in optics).

Diachylon (dī-ak'i-lon), a substance prepared by heating together oxide of lead or litharge, olive-oil and water, until the combination is complete, and replacing the water as it evaporates. It is used for curing ulcers and is the basis of many plasters.

Diacoustics (dī-a-kous'tiks), the science or doctrine of sounds as they are refracted by passing through different mediums.

Diadelphia (dī-a-del'fi-a), the name given by Linnæus to his seventeenth class of plants, distinguished by having their stamens united in two bundles by their filaments.

Diadem (dī'a-dem), an ancient ornament of royalty. It was originally a head-band of fillet made of silk, linen, or wool, worn round the temples and forehead, the ends being tied behind and let fall on the neck, as seen in old representations of the diadem of the Indian Bacchus. Subsequently it was usually set with pearls and other precious stones. The term is also used as equivalent to crown or coronet.

Diæresis (dī-ē're-sis), a separation of one syllable into two; also the mark (¨) which shows that a second vowel is to be pronounced, as in *aërial*.

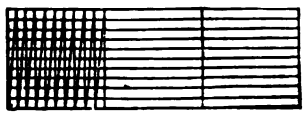
Diaglyphic (dī-a-glif'ik), a term applied to sculpture, engraving, etc., in which the objects are sunk into the general surface.

Diagnosis (dī-ag-nō'sis), in medicine, the discrimination of diseases by their distinctive marks or symptoms; the discovery of the true nature and seat of a disease.

Diagonal (dī-ag'o-nal), in geometry, a straight line drawn between the opposite angles of a quadrilateral figure.

Diagonal Scale, a measuring scale which consists of a set of parallel lines drawn on a ruler, with lines crossing them at right angles and at equal distances. One of these equal divisions, namely, that at the extremity of the ruler, is subdivided into a number of equal parts, and lines are drawn through the points of division obliquely across the parallels. With the

help of the compasses such a scale facilitates the laying down of lines of



Diagonal Scale.

any required length to the 200th part of an inch.

Diagoras (dī-ag'o-ras), an ancient Greek poet and philosopher, who flourished about 425 B.C. He spent a great part of his life in Athens. Like his teacher Democritus, he attacked the prevailing polytheism, and sought to substitute the active powers of nature for the divinities of the Greeks. On this account he had to leave Athens.

Diagram (dī'a-gram), a figure or geometrical delineation applied to the illustration or solution of geometrical problems, or any illustrative figure in which outlines are chiefly presented, and the details more or less omitted.

Dial (dī'al), or SUN-DIAL, an instrument for showing the hour of the day from the shadow thrown while the sun is shining by a *stile* or *gnomon* upon a graduated surface. This instrument was known in the earliest times by the Egyptians, Chaldeans and Hebrews. From those eastern nations it came to the Greeks. It was introduced into Rome during the first Punic war. Dials are of various construction, horizontal, inclined, or upright, the principle in every case being to show the sun's distance from the meridian by means of the shadow cast by the stile or gnomon. The stile is made parallel with the earth's axis, and may be considered as coinciding with the axis of the diurnal rotation. Consequently as the sun moves westwards the shadow of the stile moves round in the opposite direction, falling on the meridian lines so marked as to represent the hours of the day. The dial of course gives solar time, which, except on four days of the year, is slightly different from that of a well-regulated clock. Dials are now rather articles of curiosity or ornament than of use.

Dialect (dī'a-lekt), the language of a part of a country, or a distant colony, deviating either in its grammar, vocabulary, or pronunciation, from the language of that part of the common country whose idiom has been adopted as the literary language, and the medium of intercourse between well-educated people. Although the use of provincial dialects becomes inconvenient after a language has acquired a fixed literary standard, the study of such dialects is always valuable to the philologist for the light they throw on the history of the language. The diffusion of education and of printed books has much relaxed the hold which the provincial dialects of various countries once had of the people, and in general it may be said that the educated classes of any country now speak each of them a uniform language.

Dialectics (dī-a-lek'tiks), the old name of logic, or the art of reasoning, but used in Kant's philosophy to mean the logic of appearance, or that logic which treats of inevitable tendencies towards error and illusion in the very nature of reason.

Diallage (dī'al-āj), a silico-magnesian mineral of a lamellar or foliated structure. Its subspecies are green diallage, hypersthene and bronzite. The metalloidal subspecies is called schillerstein, or schillerspar. It forms diallage rock, and enters into serpentine.

Dialling (dī'al-ing), the art of making sun-dials; also the art and practice of mine-surveying in which the theodolite, magnetic needle, etc., are employed.

Dialogue (dī'a-log), a conversation or discourse between two or more persons. The word is used more particularly for a formal conversation in theatrical performances, and for a written conversation or composition in which two or more persons carry on a discourse. This form was much in favor among the ancient philosophers as a medium for expressing their thoughts on subjects. The *Dialogues* of Plato are the finest example. Many of the great French and Italian writers have used this form. Landor's *Imaginary Conversations* is the best production of this kind in English.

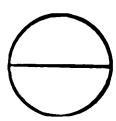
Dialysis (dī-al'i-sis), the separation of the *crystalloid* constituent elements of a mixture from the *colloid*, the former being bodies which diffuse readily, such as sugar, salt, bichromate of potassium, etc.; the latter bodies which diffuse with difficulty or not at all, bodies resembling glue or gelatin, such as gum, starch, caramel, albumen, the ordinary constituents of food, etc., etc. The dialysis is affected by pouring a mixed solution of crystalloid and colloid on a sheet of parchment paper stretched over a wood or gutta-percha hoop, having its edges well drawn up, and confined by an outer rim. The parchment is allowed to float on a basin of water.

In a short time all the crystalloid bodies will have passed through the membranous septum into the pure water, while the colloid matter will remain almost entirely in the dialyzer.

Diamagnetic (dī-a-mag-net'ik), a term applied to substances which, when under the influence of magnetism and freely suspended, take a position at right angles to the magnetic meridian, that is, point east and west. From the experiments of Faraday it appears that all matter is subject to the magnetic force as universally as it is to the gravitating force, arranging itself into two great divisions, the *paramagnetic* and *diamagnetic*. Among the former are iron, nickel, cobalt, platinum, palladium, titanium, and a few other substances; and among the latter are bismuth, antimony, cadmium, copper, gold, lead, mercury, silver, tin, zinc and most solid, liquid and gaseous substances. When a paramagnetic substance is suspended freely between the poles of a powerful horseshoe magnet it points in a line from one pole to the other, which Faraday terms the *axial line*. On the other hand, when a diagmagnetic substance is suspended in the same manner it is repelled alike by both poles, and assumes an equatorial direction, or a direction at right angles to the axial line. It has been supposed that the diamagnetic phenomena are a result of the superior magnetic force of the oxygen of the atmosphere.

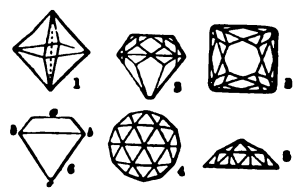
Diamantina (dē-a-man-tē'na), a town of Brazil in the diamond district in the province of Minas Geraes, the inhabitants of which are almost all engaged in the gold and diamond trade. Pop. 17,980.

Diameter (dī-am'e-tėr), the straight line drawn through the center of a circle, and touching the two opposite points of the circumference. It thus divides the circle into two equal parts, and is the greatest chord. The length of the diameter is to the length of the circumference of the circle as 1 to 3.14159265. . . . the latter number being an interminable decimal.



Diameter.

Diamond (dī'a-mond), the hardest and one of the most valuable of gems, and the purest form in which the element carbon is found. (See *Carbon*.) It crystallizes in forms belonging to the regular or cubic system, the most common being the regular octahedron and rhombic dodecahedron (twelve faces). The finest diamonds are colorless, perfectly clear, and pellucid. Such are said to be of the finest *water*. But diamonds are often blue, pink, green, or yellow, and such are highly prized if of a decided and equal tint throughout. The hardness of the diamond is such that nothing will scratch it, nor can it be cut but by itself. The value of a diamond is much enhanced by cutting facets upon it inclined at certain angles to each other so as to produce the greatest possible play of color and luster. What is called the *brilliant* cut best brings out the beauty of the stone. Its upper or principal face is octagonal, surrounded by many facets. But this form of cutting requires an originally well-shaped stone. For other diamonds the *rose* cut is used. In this form six triangles are cut on the top so that their apices meet in a point called the summit. Round this are disposed other facets. Stones which are too thin to cut as rose-diamonds are cut as *table*-diamonds, which have a very slight play of color. In the cut Fig. 1 is the diamond in its rough state; Fig. 2 is the vertical, and Fig. 3 the lateral appearance of a brilliant; Fig.



Diamonds, rough and variously cut.

4 the vertical, and Fig. 5 the lateral appearance of a rose-cut diamond; in Fig. 6 the flat portion *a* in a cut stone is called the *table;* the part *a b b*, which projects from the setting, is the *front*, the part *b b c*, sunk in the setting, is the *back* or *culasse*, while the line *b b* is the *girdle*. The art of cutting and polishing the diamond was unknown in Europe till the fifteenth century, and the stone itself was not nearly so highly valued in the middle ages as the ruby. Diamonds are valuable for many purposes. Their powder is the best for the lapidary, and they are used for jeweling watches, as lenses for microscopes, and in the cutting of window and plate glass. When used as a glazier's tool the diamond must be uncut. Inferior kinds of diamonds are also extensively used by engineers in rock-boring (see *Boring*), and by copper-plate engravers as etching-points. Diamonds are obtained from alluvial deposits (sands, clays, etc.), being separated by washing. They are found in India.

Borneo, and other parts of the East; sometimes in N. America and Australia; but the chief diamond fields of to-day are Brazil and Cape Colony, the center of the latter being Kimberley in Griqua Land West. Diamonds were first discovered in the latter in 1867, but since then the output has amounted to over $200,000,000 in value. One of the largest diamonds known (weight 367 carats) was found in Borneo about a century ago, and belongs to the Rajah of Mattan. One of the most celebrated is the Koh-i-noor (Mountain of Light), belonging to the British crown. It weighed originally nearly 800 carats, but by subsequent recuttings has been reduced to 103¾ carats. The Orloff diamond, belonging to the Emperor of Russia, weighs 195 carats; the Pitt diamond, among the French crown jewels, 136½. The former, which came from India, has been thought to have originally formed part of the Koh-i-noor stone. The largest Brazilian diamond weighed 254½ carats and was cut to a brilliant of 125. Some of the South African diamonds are also very large, one being found in 1893 weighing 971 carats, or nearly half a pound. More recently a much larger one has been found, weighing 3034 carats. This has been cut into eleven pieces, the largest, a drop brilliant, weighing 516½ carats. This, called the Star of South Africa, has been placed in King George's scepter, and another, of 309 3-16 carats, in his crown.

Diamond, in technical language, is the rhomboid—that is, a quadrangle with equal sides and two obtuse angles.

Diamond-beetle, the *Entimus imperialis*, a splendid coleopterous insect belonging to the family Curculionidæ or weevils.

Diamond-drill. See *Boring.*

Diamond Harbor, a port on the left bank of the Hugli River, about 38 miles by the railway from Calcutta, formerly much used as an anchorage for ships waiting for the tide.

Diamond Necklace, an affair of some note in French history immediately preceding the Revolution. See *Antoinette, Marie; La Motte;* and *Rohan, Louis*

Diana (dī-an'a), in mythology, an ancient Italian goddess whom the Romans latterly identified with the Greek Artĕmis, with whom she had various attributes in common, being the virgin goddess of the moon and of the chase, and having as attributes the crescent moon, bow, arrows and quiver. The name is a feminine form of Janus. She seems to have been originally the patron divinity of the Sabines and

Diana.—Antique statue in the Louvre

Latins. She was worshiped especially by women as presiding over births, no man being allowed to enter her temple. See *Artemis.*

Diana-monkey (*Cercopithēcus Diana*), a species of monkey found in Africa, and so named from the crescent-shaped band on the forehead resembling the crescent moon, which was the symbol of Diana.

Diana of Poitiers, Duchess of Valentinois, born in 1499. She was the mistress of King Henry II of France and descended from the noble family of Poitiers, in Dauphiny. At an early age she married the Grand-seneschal of Normandy, Louis de Brezé, became a widow at thirty-one, and some time after the mistress of the young Duke of Orleans. On his accession to the throne, in 1547, as Henry II, Diana continued to exercise an absolute empire over him till his death in 1559. After that event she retired to her castle of Anet, where she died in 1566.

Diandria (dī-an'dri-a), the second class in the Linnæan system, comprehending all genera with flowers having only two stamens, provided the stamens are neither united at their base, nor combined with the style and stigma, nor separated from the pistil.

Dianthus (dī-an'thus), the genus of flowers to which the pink belongs.

Diapason (dī-a-pā'zun), in music, the concord of the first and last notes of an octave. The word is also used for the most important foundation-stops of an organ. They are of several kinds, as *open diapason*, *stopped diapason*, *double diapason*. The French use the term as equivalent to pitch in music.

Diaper (dī'a-pėr), a kind of textile fabric much used for towels and napkins, and formed either of linen or cotton, or a mixture of the two, upon the surface of which a flowered or figured pattern is produced by a peculiar mode of twilling.—As a term in ornamentation diaper is applied to a surface covered with a flowered pattern sculptured in low relief, or to a similar pattern in painting or gilding covering a panel or flat surface.

Diaphoretics (dī-a-fo-re'tiks) are agents used in medical practice for producing a greater degree of perspiration than is natural, but less than in sweating. The Turkish bath and a large part of hydropathic treatment, diluent drinks, etc., are employed for this purpose. *Diaphoretics* increase only the insensible perspiration, while *sudorifics* excite the sensible discharge called sweat.

Diaphragm (dī'a-fram), in anatomy, a muscular membrane placed transversely in the trunk, and dividing the chest from the abdominal cavity. In its natural situation the diaphragm is convex on the upper side and concave on its lower, but when the lungs are filled with air it becomes almost flat. It is the principal agent in respiration, particularly in inspiration. A complete diaphragm is found only in Mammalia.

Diarbekir (dē-ăr-bek'r), a town of Asiatic Turkey, capital of the pashalic of same name, on a high bank overlooking the Tigris, and surrounded by a lofty, massive wall. It has manufactures of iron and copper ware, leather, silk, woolen and cotton goods, and a considerable trade. Pop. about 35,000.

Diarrhœa (dī-a-rē'a), a very common disease, which consists in an increased discharge from the alimentary canal, the evacuations being but little affected, except in their assuming a more liquid consistence. They are generally preceded or accompanied by flatulence and a gripping pain in the bowels, and frequently by sickness. Diarrhœa is often produced by indigestible food, repletion of the stomach, cold applied to the surface of the body, impressions on the nervous system. It is often also a symptom of some other disease. In its simple form diarrhœa is not difficult of cure, mild purgatives given in small doses and accompanied by quantities of mild diluents being frequently successful. Castor-oil, rhubarb and magnesia are the most generally applicable. The food should be of the least stimulating kind.

Diastase (dī'as-tās), a substance existing in barley, oats and potatoes, but only after germination. When in solution it possesses the property of causing fecula or starch to break up at the temperature of 150° Fahr., transforming it first into dextrine and then into sugar. It is obtained by digesting in a mixture of three parts of water and one of alcohol, at a temperature of 113° Fahr., a certain quantity of germinated barley ground and dried in the open air, and then putting the whole under pressure and filtering it. Diastase is solid, white and soluble in water and diluted alcohol, but insoluble in strong alcohol.

Diathermancy (dī-a-th er'man-si), the property that is possessed in various degrees by different substances of transmitting radiant heat. Bodies that are equally transparent, that is, bodies which have equal power of transmitting rays of light, are very different in their power of transmitting heat rays. Thus a thin plate of glass and a thin plate of rock-salt may be nearly equally transparent, but the plate of rock-salt has far superior power of transmitting rays of heat. The latter, it has been found, allows 92 per cent. of the total heat from any source to pass; glass only 39 per cent. from a lamp flame, 24 per cent. from incandescent platinum, etc. Rock-salt is the only body equally diathermanous to heat from all sources. The diathermancy of the plates in every case decreases very rapidly as their thickness is increased.

Diathesis (dī-ath'e-sis), in medicine, a certain general habit or constitution of body as predisposing to certain diseases.

Diatomaceæ (dī-a-to-mā'se-ē), a nat. order of confervoid algæ, consisting of microscopic plants found in fresh, brackish and salt water, and on moist plants and damp ground. The frond secretes a very large quantity of silex, which is formed in each cell into three portions, viz., two generally symmetrical valves and a connecting hoop. The species consist of single free cells, or the cells remain attached so as to form linear, flabelliform, circular, or geniculate fronds, or in some cases the cells or frustules are enclosed in a transparent, gelatinous sheath or frond. The ordinary method of increase is by cell division

mous Papers of the Pickwick Club this work was published in two vols. 8vo. in 1837. In the same year Dickens was engaged as editor of *Bentley's Magazine*, to which he contributed *Oliver Twist*, a work which opened up that vein of philanthropic pathos and indignant satire of institutions which became a distinguishing feature of his works. Before the completion of *Oliver Twist*, *Nicholas Nickleby* was begun, being issued complete in 1839. As the special object of *Oliver Twist* was to expose the conduct of workhouses, that of *Nicholas Nickleby* was to denounce the management of cheap boarding-schools. *Master Humphrey's Clock*, issued in weekly numbers, contained among other matter two other leading tales, *The Old Curiosity Shop* and *Barnaby Rudge*, the latter a historical tale, going back to the times of the Gordon riots. It was published complete in 1840-41. In 1841 Dickens visited the United States, and on his return wrote *American Notes for General Circulation* (1842). His next novel, *Martin Chuzzlewit* (1844), dwelt again on his American experiences. These works created great indignation in the United States by the severity of their satirical criticism. *Martin Chuzzlewit* added a number of typical figures—Mr. Pecksniff, Mark Tapley, Sarah Gamp and others—to English literature. The series of *Christmas Tales* followed, in which a new element of his genius, the power of handling the weird machinery of ghostly legend in subordination to his own peculiar humor, excited a new sensation of wonder and delight. These enumerated consecutively were: *A Christmas Carol* (1843), *The Chimes* (1844), *The Cricket on the Hearth* (1845), *The Battle of Life* (1846), *The Haunted Man* and the *Ghost's Bargain* (1847). The extraordinary popularity of these tales created for a time a new department in literature, that of the sensational tale for the Christmas season. In 1845 Dickens went to Italy, and on his return the *Daily News*, established on January 1, 1846, was intrusted to his editorial management; but, despite his early training, this was an occupation uncongenial to his mind, and in a few months the experiment was abandoned. His *Pictures from Italy* were published the same year. Next followed his novels of *Dombey and Son* (1848) and *David Copperfield*, a work which has a strong autobiographical element in it (1849-50). In 1850 Dickens became editor of the weekly serial *Household Words*, in which various original contributions from his own pen appeared. In 1853 his *Bleak House* came out. *A Child's History of England*, commenced in *Household Words*, was published in 1852-54. *Hard Times* appeared in *Household Words*, and was published in 1854. *Little Dorrit*, commenced in 1856, dealt with imprisonment for debt, the contrasts of character developed by wealth and poverty, and executive imbecility, idealized in the *Circumlocution Office*. In 1859, in consequence of a disagreement with his publishers, *All the Year Round* superseded *Household Words*; and in the first number of this periodical, May 28, was begun *A Tale of Two Cities*. *Great Expectations* followed in the same paper, beginning December 1, 1860. In *All the Year Round* also appeared a series of disconnected sketches, called the *Uncommercial Traveler*, published in 1868. *Our Mutual Friend*, completed in 1865, and published in the usual monthly numbers, with illustrations by Marcus Stone, was the last great serial work which Dickens lived to finish. It contained some studies of characters of a breadth and depth unusual with Dickens, and is distinguished among his works by its elaborate plot. The first number of his last work, *The Mystery of Edwin Drood*, was issued on April 1, 1870, and only three numbers had appeared when he died somewhat suddenly, at his residence, Gad's Hill Place, near Rochester, on June 9th. He had considerably overtaxed his strength during his later years, more especially by his successive series of public readings from his own works, one series being delivered in America in 1867-68. He was buried in Westminster Abbey. Dickens' work as a novelist is firmly based upon a wide and keen observation of men. It is true that most of his characters suffer from being created to exhibit little more than one trait or quality alone, and thus receive an air of grotesqueness and exaggeration which approaches caricature. But the single trait or quality which they embody is so truly conceived, and exhibited with such vitality and humor, as to place Dickens, in spite of all that is grotesque and overstrained in his work, among the great artists.

Dickinson (dĭk'ĭn-sŭn), Don M., lawyer, was born at Port Ontario, New York, in 1846; studied law in Michigan, and practiced in Detroit and Washington. He became prominent as a Democratic politician in the Greeley campaign of 1872 and the Tilden campaign of 1876. He was postmaster-general of the United States, 1887-89, chairman of the Democratic

National Campaign Committee in 1892, senior counsel for the United States in the Fur Seal Arbitration of 1896-97, and member of the Court of Arbitration in the controversy between the United States and Salvador in 1902.

Dickinson College, a collegiate institution at Carlisle, Pennsylvania, the oldest in the State except the University of Pennsylvania, it being founded in 1783. It was named after Hon. John Dickinson, who gave it valuable gifts. It was a Presbyterian institution until 1883, when it passed under the control of the Methodists. It has endowed funds of about $360,000.

Dickson City (dik'sun), a borough in Lackawanna Co., Pennsylvania, 5 miles N. of Scranton. It has foundries, machine shops, silk-mills, etc., and coal is mined in its vicinity. Pop. (1920) 11,049.

Dicotyledon (dī-kot-i-lē'don), a plant whose seeds are characterized by the embryo containing a pair of cotyledons or seed-leaves, which are always opposite to each other. Dicotyledons are further characterized by their netted-veined leaves and the exogenous structure of their stems. The class is divided into four subclasses: Thalamifloræ, Calycifloræ, Corollifloræ and Monochlamydeæ (which see, respectively). The class receives also the name of *exogens*.

Dictator (dik-tā'tur), an extraordinary magistrate of the Roman republic, first instituted B.C. 501. The power of naming a dictator when an emergency arose requiring a concentration of the powers of the state in a single superior officer was vested by a resolution of the senate in one of the consuls. The dictatorship was limited to six months, and the person who held it could not go out of Italy. This rule was laid aside during the first Punic war. The dictator was also forbidden to appear in Rome on horseback without the permission of the people, and he had no control over the public funds without the permission of the senate. He had the power of life and death, and could punish without appeal to the senate or people. All the other magistrates were under his orders.

Dictionary (dik'shun-ar-i; from the Latin *dictio*, a saying, expression, word), a book containing the words, or subjects, which it treats, arranged in alphabetical order. It may be either a vocabulary, or collection of the words in a language, with their definitions; or a special work on one or more branches of science or art prepared on the principle of alphabetical arrangement, such as dictionaries of biography, law, music, medicine, etc. Among dictionaries of the English language, the earliest seem to have been those of Barett, 1573, and of Bullokar, 1616. That of Dr. Johnson, published in 1755, made an epoch in this department of literature. Previous to this the chief English dictionary was that of Bailey, a useful work in its way. An enlarged edition of Johnson's dictionary, by the Rev. H. J. Todd, appeared in 1818; and this, again enlarged and modified, was issued under the editorship of Dr. R. G. Latham (1864-72). The first American dictionary was that of Noah Webster, first published in 1828, and frequently republished since. It greatly enlarged the dictionary vocabulary, gave full etymologies, and indicated both pronounciation and syllabification. It was the first dictionary to embody the historical principles of treatment which find their culmination in the *New English Dictionary*. This monumental work is being edited mainly by Dr. James A. H. Murray of Oxford, England. The first section was published in 1884. A rival of Webster's work appeared in Worcester's in 1859; and many smaller dictionaries for home and school use have since found general acceptance. *The Century Dictionary*, the first edition of which appeared in 1889-91, is the best American dictionary on a large scale. The chief etymological dictionary of the English language, is that of Professor Skeat. The greatest French dictionary is that of Littré; the greatest German, that of the brothers Grimm; the greatest Latin, the *Thesaurus Linguae Latinae*, now being prepared.

Dictograph (dik'tō-grăf), or DICTAGRAPH, an instrument magnifying sound, invented by K. M. Turner, of New York, in 1907. It consists of a small supersensitive transmitter, a receiver or ear piece, connecting wires, and a small battery. The transmitter can be easily concealed and a voice within fifteen feet is carried over wires to any required distance. This instrument has been found valuable in detective work.

Dictyogen (dik-tī'ō-jen), the name given to a group of plants, with net-veined leaves, intermediate between the monocotyledons and dicotyledons, as the yam, sarsaparilla, etc.

Didactic Poetry (di-dak'tik), poetry which professes to give a kind of systematized instruction. In a larger sense of the word most great poems might be called didactic, since they

contain a didactic element in the shape of history or moral teaching. Dante's *Divina Commedia*, Milton's *Paradise Lost*, or Goethe's *Faust*, for example. The difference may be said to be this, that in the one case the materials are limited and controlled by nothing but the creative fancy of the poet, while in the other they are much more determined by the actual nature of the subject treated of.

Didelphia (dī-del'fi-a), one of the three subclasses of the mammalia (the others being Monodelphia and Ornithodelphia), comprising the order otherwise known as Marsupials, which form the only order in the subclass.

Didelphys (dī-del'fis). See *Opossum*.

Diderot (dēd-rō), DENIS, a French writer and philosopher, was born in 1713, at Langres, in Champagne, and educated in the school of the Jesuits, and afterwards at Paris, at the College of Harcourt. His first works were the *Essai sur le Mérite et la Vertu* (1745); and the *Pensées Philosophiques* (1746), a pamphlet against the Christian religion. His *Lettre sur les Aveugles à l'Usage de Ceux qui Voyent*, is in the same strain. These heterodox publications cost him an imprisonment for some time at Vincennes. Diderot now tried writing for the stage, but his pieces were failures. In 1749 he had begun along with D'Alembert and some others the *Encyclopædia*. At first it was intended to be mainly a translation of one already published in English by Chambers. Diderot and D'Alembert, however, enlarged upon this project, and made the new *Encyclopædia* a magnificently comprehensive and bold account of all the thought and science of the time. Diderot, besides revising the whole, undertook at first the mechanical arts, and subsequently made contributions in history, philosophy and art criticism. But the profits of all his labor were small, and it was only the liberality of the Empress Catharine, who purchased his library for 50,000 livres and made him a yearly allowance of 1000 livres, that saved Diderot from indigence. In 1773 he visited St. Petersburg to thank his benefactress and was received with great honor. On his return to France he lived in retirement, and died in 1784. Besides his articles in the *Encyclopædia*, he wrote numerous works, some of which were published after his death. Among the best known are *Le Neveu de Rameau*, a kind of philosophical dialogue which Goethe thought worthy of translation; *Essai sur la Peinture*, and *Paradoxe sur le Comédien*, suggestive essays on the principles of painting and acting; two lively tales, *La Religieuse* and *Jacques le Fataliste*.

Dido (dī'do), or ELISSA, the reputed founder of Carthage. She was the daughter of a king of Tyre, and after her father's death her brother Pygmalion murdered her husband Sicharbas, or as Virgil calls him, Sichæus, with the view of obtaining his wealth. But Dido, accompanied by many Tyrians of her party, fled with all the treasure over sea, and landing on the coast of Africa, founded Carthage about 860 B.C. The story is told by Virgil with many inventions of his own in the *Æneid* (books i and ii).

Didot (dē-dō), a famous house of printers, booksellers and type-founders at Paris. The founder was FRANÇOIS DIDOT, born in 1689; died in 1757. Of his sons FRANÇOIS AMBROISE (born in 1720; died in 1804) and PIERRE FRANÇOIS (born in 1732; died in 1795), the first distinguished himself in the type-founding art as an inventor of new processes and machines, the second was equally eminent by his bibliographical knowledge, and contributed much also to the advancement of printing. PIERRE (born in 1761; died in 1853), succeeded his father FRANÇOIS AMBROISE in the printing business. He made himself famous by his magnificent editions of classic authors in folio, among which his Virgil (1798) and his Racine (1801) may be particularly mentioned. He did much also for the improvement of types, etc. He is known also as an author.—FIRMIN (born in 1764; died in 1836), the brother of Pierre, took charge of the type-founding, was the inventor of a new sort of script, and an improver of the stereotype process.—AMBROISE FIRMIN (born in 1790; died in 1876) and HYACINTHE FIRMIN (born in 1794; died in 1880) occupied a distinguished position among the publishers of Paris. The house has now extended its trade into everything connected with bookselling, papermaking, bookbinding, etc.

Didunculus (dī-dung'kū-lus), a genus of birds allied to the pigeons, and comprising only the one species, *D. strigirostris* of the Navigator Islands. The bird is of special interest as being the nearest living ally of the extinct dodo. It has a length of about 14 inches, with a glossy plumage verging from velvety black on the back to a greenish black on the head, breast and abdomen. The large beak, which is nearly as long as the head, is greatly arched on the upper half, while the lower

is furnished with two or three tooth-like indentations.

Didymi (did'ymi), an ancient temple of Apollo in Asia Minor, on the seacoast of Ionia. It was one of the most celebrated oracles of the Greek world and was ministered to by the Milesian Branchidæ, a priestly caste tracing their ancestry back to Branchus, a favorite of Apollo. The temple was destroyed by Xerxes in 481 B. C. and the Branchidæ were exiled to the far northeast of Persia. Rebuilding of the temple was commenced in 332 B. C., but it was never finished, though the work done on it was of the most magnificent quality, and it was reckoned as one of the greatest of the Greek temples.

Didymium (dī-dim'i-um), a rare metallic element, occurring along with *lanthanium* in the mineral cerite as discovered by Mosander in 1843. Recently it is said to have been resolved into two new elements: *Praseodymium* and *Neodymium*.

Didynamia (dī-di-nā'mi-a), the fourteenth class in the Linnæan system of plants, the members of which have four stamens, of which two are longer than the other two.

Die (dī), a metallic stamp for impressing a design or figure upon coins or other metallic objects. See *Die-sinking*.

Die (dē), an ancient town of France, dep. Drôme, 26 miles southeast of Valence; with a former cathedral and Roman remains. Pop. (1906) 3090.

Dié (dē-ā), St., a town of France, dep. of Vosges, on the Meurthe, 25 miles E. N. E. of Epinal. Both iron and copper are worked; there are marble quarries; and a variety of manufactures are carried on. Pop. 16,289.

Diebitsch-Sabalkanski, HANS KARL, a Russian general, born at Grossleippe in Silesia in 1785, was educated at the military school of Berlin, but in 1801 quitted the Prussian service for that of Russia. He was present at the battles of Austerlitz and Friedland, served with distinction in the campaign of 1812, took part in the battles of Dresden and Leipsig, and was made lieutenant-general at the age of twenty-eight. He had the chief command in the Turkish war of 1828-29, stormed Varna, and made the famous passage of the Balkans, for which the surname of Sabalkanski was conferred on him. In 1830 he commanded the army sent against the revolted Poles, but did not distinguish himself in this service. He died in 1831.

Diedenhofen (dē'den-hō-vn). See *Thionville*.

Dieffenbach (dē'fen-bâh), JOHANN FRIEDRICH, a German surgeon, born at Königsberg in 1792. After having studied at Bonn and Paris he settled in Berlin, where his talent as an operator soon attracted notice. Surgery is particularly indebted to him for new methods of forming artificial noses, eyelids, lips, etc., and curing squinting, stammering, etc. He died in 1847.

Dieffenbachia (dēf-en-bak'i-a). See *Dumb-cane*.

Dielectric (dī-e-lek'trik), a name applied by Faraday to any medium through or across which electrostatic induction can take place. (See *Induction, Electrostatic.*) Faraday first showed that electrostatic induction was not action at a distance, but took place by means of the insulating medium separating the two conductors. The medium he named a *dielectric*, and measured its specific inductive capacity by taking that of common air as unity.

Dielytra (dī-el'i'tra), a genus of plants belonging to the nat. order Fumariaceæ or Fumiteries. The best known is *D. spectabilis*, a native of Northern China and Siberia, now common in European and other gardens. It blossoms in April and May, and its long drooping racemes of purplish-red blossoms present a very graceful appearance. It grows freely in the open air. It is sometimes called pendent heart or virgin's heart from the shape of the blossoms.

Diemen (dē'men), ANTON VAN, a Dutch administrator, was born in 1593. Having gone to India, he speedily rose to the highest dignities, and was at length, in 1636, made governor-general. He administered the government with much ability, and contributed much to the establishment of the Dutch commerce in India. Abel Tasman, whom he sent with a vessel to the South Seas in 1642, gave the name of *Van Diemen's Land*, to the island now called Tasmania. Van Diemen died in 1645.

Dieppe (dē-ep), a seaport town of France, department Seine-Inférieure, on the English Channel, at the embouchure of the Arques, 93 miles N. N. W. Paris. Almost the only public edifices worth special notice are the two Gothic churches (St. Jacques, begun in the thirteenth century, and St. Rémi, founded in 1522), and the old castle (1433), now a barrack. To the west of Dieppe proper is the suburb La Barre; and on the opposite side of the harbor

La Pollet, which is inhabited chiefly by sailors and fishermen. Dieppe is one of the chief watering places of France, and is much frequented by visitors. The manufactures include works in ivory, work in horn and bone, lacemaking, sugar-refining, shipbuilding, etc. In early times Dieppe was the chief port of France, but its prosperity diminished after the revocation of the Edict of Nantes (1865). Pop. 22,120.

Diesel Engine, an oil engine invented by Rudolph Diesel in 1893. The engine operates at compression pressures very much higher than those used in any other internal-combustion engines, and it dispenses with the usual igniting devices by rendering the air charge incandescent by compression. The efficiency of the Diesel engine is high, and it can use low grades of fuel, but it has the disadvantage of greater weight per horse-power than other engines. It has found increasing favor for use in marine propulsion, and in 1913 was adapted to high-speed railway service, and put into use in Germany.

Dies Fasti et Nefasti (dī'ēs), a Roman division of days, with reference to judicial business, into working days and holidays. A *dies fastus* was a working day; a *dies nefastus*, a legal holiday.

Die-sinking, is the art of preparing dies for stamping coins, buttons, medallions, jewelry, fittings, etc. The steel for the manufacture of dies is carefully selected, forged at a high heat into the rough die, softened by careful annealing, and then handed over to the engraver. After the engraver has worked out the design in intaglio the die is put through the operation of hardening, after which, being cleaned and polished, it is called a *matrix*. This is not, however, generally employed in multiplying impressions, but is used for making a *punch* or steel impression for relief. For this purpose another block of steel of the same quality is selected, and, being carefully annealed or softened, is compressed by proper machinery upon the matrix until it receives the impression. When this process is complete the impression is retouched by the engraver, and hardened and collared like the matrix. Any number of dies may now be made from this punch by impressing upon it plugs of soft steel.

Dies Iræ (dī'ēs ī'rē), one of the great Latin hymns of the mediæval church, generally used as part of the requiem or mass for the souls of the dead. It describes, as its name ('the day of wrath'), the final judgment of the world.

Dieskau (dēs'kou), Ludwig August (1701-67), a German soldier who entered the French army and was sent to Canada in 1755 to conduct the campaign against the English. With 200 regulars and 1200 Indians and Canadians he moved up Lake Champlain to attack Fort Edward (q. v.), defended by Sir William Johnson (q. v.). English artillery forced him to withdraw, and the retreat became a rout, in which he himself was captured. He was liberated, 1763, and returned to Paris.

Diet (dī'et), a meeting of some body of men held for deliberation or other purposes; a term especially applied to the legislative or administrative assemblies of the German Empire, Austria, etc.

Dietetics (dī-e-tet'iks), that part of medicine which relates to the regulation of diet. The ideal diet is clearly that which, without burdening the viscera uselessly, furnishes all necessary nutritive elements, with due consideration for special physiological conditions in any given case. Under the head of *Aliment* the physiological properties of various foods have already been considered theoretically in respect of their capacity to supply physical waste in nitrogenous and non-nitrogenous matter. (See *Aliment.*) No single substance contains the elements needed to replace this waste in their requisite proportions, and a mixed diet is therefore necessary. For instance, to secure the required amount of carbon a man would need to eat about 4 lbs. of lean beef, while 1 lb. would yield all the nitrogen required; thus, apart from the labor of digesting 4 lbs. of beef, the body would be compelled to get rid of the excess of nitrogen. Bread, on the other hand, has carbon in abundance, but is deficient in nitrogen; so that by uniting 2 lbs. of bread with ¾ lb. of lean meat, the due proportion of carbon and nitrogen is satisfactorily supplied. Milk and oatmeal taken together also contain nitrogenous and non-nitrogenous substances in nearly the required proportions. A certain proportion of saline matter is also necessary. The nature of the food most suitable for a healthy man is dependent in part upon general conditions such as climate and season, and in part upon special conditions of individual habit. The inhabitants of the Arctic regions need large quantities of oleaginous food; those of the tropics live chiefly on starchy products. With increased activity and exertion, as in training, an increase in the

nitrogenous foods becomes necessary. In a state of health we need not draw hair-breadth distinctions as to the superior salubrity of the several sorts of diet, the quantity rather than the quality of food being the main consideration. Those persons who have been most remarkable for health and life have generally been contented with two moderate meals a day, which are certainly quite sufficient during a state of health. In various countries the breakfast generally consists of tea, coffee, or cocoa, with a certain proportion of bread and butter; persons with delicate digestive powers, or who lead a sedentary life, cannot with safety or comfort eat animal food *constantly* at breakfast. At dinner all made dishes highly spiced, such as curries, turtle-soup, etc., as provoking appetite, are hurtful; and the custom of late dining is not to be commended. Stewed and boiled meats are more difficult to digest than meat cooked by fire alone. The flesh of young animals seems to be more difficult of digestion than that of old; and the flesh of tame than that of wild animals. All sorts of fat meat must be taken in smaller quantities. Hence, also, ham, bacon and salted meats cannot be eaten in such quantities as the tender flesh of poultry. Fish has the advantage of being easily soluble. All boiled vegetables are in general easy of digestion; raw vegetables and salads are rather more difficult. Fruit should be taken in the forenoon rather than after a hearty meal.

In all diseases attended with much fever or quickness of pulse the stomach loathes animal food, and there is generally a great increase of thirst, to quench which water, either quite cold, or iced, or tepid, or rendered acid, may be freely indulged. Infusions, too, of barley, sage, balm, etc., may be taken. In chronic diseases attended with hectic fever, milk is the most proper diet. The best food for infants is, of course, their mothers' milk; but whenever they begin to cut teeth a little animal food, such as soft-boiled eggs, beef broth and even chicken minced very fine, may be given. Many infants suffer from having too much sugar given them in their food.

Dietrich (dē'triĥ), CHRISTIAN WILHELM ERNST, a German painter and engraver, called by Winckelmann 'the Raphael of Landscape,' born in 1712. He studied under his father, and afterwards under Alexander Thiele at Dresden, where he became court painter, professor in the academy, etc. He adopted several different manners or styles of painting, successfully imitating Raphael and Mieris, Correggio and Ostade. He died in 1774.

Dietrich of Bern, the name under which Theodoric the Great, king of the Ostrogoths, appears in the old German legends. Bern stands for Verona, his capital.

Dieu, or D'YEU (dyeu; ancient *Insula Dei*), an island off the west coast of France, department of Vendée. It is inaccessible on the west side, but on the east has a tolerable harbor defended by batteries. The chief industry is fishing. There are four lighthouses on the island. Pop. about 3000.

Dieu et Mon Droit (dyeu e mon d r w ä; 'God and my right'), the motto of the arms of England, first assumed by Richard I, and revived by Edward III when he claimed the crown of France. Except during the reigns of Elizabeth and Anne, who used the motto *Semper eadem*, and of William III, who personally used *Je maintiendray*, it has ever since been the royal motto of England.

Diez (dēts), FRIEDRICH CHRISTIAN, a German philologist of the Romance languages, born in 1794. Having qualified himself as a lecturer at Bonn, he was appointed professor of the Romance languages in 1830. His work stands in much the same relation to the Romance dialects which the researches of Grimm occupy with respect to German dialects. In addition to various works on the poetry of the Troubadours, he published a very valuable *Grammatik der Romanischen Sprachen* in 1836-42, and an *Etymologisches Wörterbuch der Romanischen Sprachen* in 1853. He died in 1876.

Differential Calculus. See *Calculus.*

Differential Thermometer (d i f-e-ren'-shal), an instrument for determining very minute differences of temperature. Leslie's differential thermometer consists of two glass bulbs containing air connected by a bent tube containing some sulphuric acid, the movement of which (as the air expands and contracts) serves to indicate any slight difference of temperature between the two bulbs.

Diffraction (di-frak'shun), a term applied to certain phenomena connected with the modification that rays of light undergo in passing close to the edge of an opaque body. Thus when a beam of direct sunlight is admitted into a dark room through a narrow slit, and falls upon a screen placed to receive it, there appears a line of white light bordered by colored fringes:

these fringes are produced by diffraction. See *Interference*.

Diffusion (di-fū'shun), the gradual dispersion of particles of one liquid or gas among those of another. Thus, in the case of gases, when a jar of oxygen and a jar of hydrogen are connected together by a tube or opening of any kind, they rapidly become mixed; and their mixture does not depend on gravity, but takes place in opposition to that force, as may be shown by placing the jar of hydrogen gas above the other. Oxygen is sixteen times heavier than hydrogen, bulk for bulk, but the heavier gas moves upwards and the lighter downwards, and the process of intermixture, or *diffusion*, goes on until the two gases are apparently equally distributed throughout the whole space After that they have no tendency whatever to separate. Similarly, if two vessels, one containing oxygen and the other hydrogen, be connected by a tube which is stuffed with a plug of porous material, such as plaster of Paris, the gases gradually diffuse one into the other through the porous plug. The two gases, however, do not pass through the porous separator at equal rates, but in *inverse proportion to the square roots of the densities of the gases*. Thus in the cases of two vessels, one containing hydrogen and the other oxygen, which is sixteen times as heavy as hydrogen, the hydrogen will pass towards the oxygen jar four times as quickly as the oxygen will pass towards the hydrogen jar. Kindred phenomena occur when two liquids that are capable of mixing, such as alcohol and water, are put in contact, the two gradually diffusing one into the other in spite of the action of gravity. In some cases, however, as where ether and water are employed, the diffusion is only partial, extending a comparatively small distance on either side of the original line of separation. When solutions of various solid bodies are placed in contact, interdiffusion also takes place. On the results of his examination of the phenomena of diffusion of liquids and salts across porous membranes or *septa*, Graham founded a method of separating *colloid* from *crystalloid* bodies, which he called *dialysis* (which see).

Digamma (dī-gam'a), a letter which once belonged to the Greek alphabet, and which remained longest in use among the Æolians. It resembled our letter F, and hence was called *digamma*, that is, double F. It appears to have had the force of *f* or *v*.

Digby (dig'bi), Sir Everard, an English gentleman, born of a Roman Catholic family in 1581. He enjoyed some consideration at the court of Elizabeth and James I, by whom he was knighted. Having been accused of contributing money to the Guy Fawkes conspiracy, he was hanged in 1606.

Digby, Sir Kenelm, eldest son of the preceding, born in 1603. He studied at Oxford, was knighted in 1623, and on the accession of Charles I was created a gentleman of the bedchamber, a commissioner of the navy, and a governor of the Trinity House. He soon after fitted out at his own expense a small but successful squadron against the Algerines and Venetians. In 1636 he became a Roman Catholic, and was imprisoned as a Royalist from 1638 to 1643, when he was allowed to retire to the continent. At the restoration he returned to England, became a member of the Royal Society, and was much visited by men of science. He died in 1665. He wrote numerous works; a *Treatise on the Nature of Bodies*, a *Treatise on the Nature and Operation of the Soul, Of the Cure of Wounds by the Power of Sympathy*, etc. Evelyn calls him 'an arrant mountebank.'

Digest (dī'jest), a name originally given to a collection or body of Roman laws, digested or arranged under proper titles by order of the emperor Justinian. Hence applied to any somewhat similar collection.

Digester (di-jes'ter), a strong vessel of copper or iron, on which is screwed an air-tight cover with a safety-valve, the object being to prevent loss of heat by evaporation. Water may be thus heated to 400° Fahr.; at which temperature its solvent power is so greatly increased that bones are converted into a jelly.

Digestion (di-jest'yun), is that process in the animal body by which the aliments are so acted upon that the nutritive parts are prepared to enter the circulation, and separated from those which cannot afford nourishment to the body. The organs effecting this process are called the *digestive* organs, and consist of the stomach, the great and small intestines, etc. (see *Intestine*, *Stomach*), the liver and pancreas. When the aliments, after being properly prepared and mixed with saliva by mastication, have reached the stomach, they are intimately united with a liquid substance called the *gastric juice*, by the motion of the stomach. By this motion the aliments are mechanically separated into their smallest parts, penetrated by the gastric juice, and transformed into a uniform pulpy or fluid mass. The gas-

tric juice acts upon the albuminous parts of the food, converting them into peptones, which can pass through organic membranes and thus enter the blood. This action is aided by the warmth of the stomach. The pulpy mass, called *chyme*, proceeds from the stomach through the pylorus, into that part of the intestinal canal called the small intestine, where it is mixed with the pancreatic juice, bile and intestinal juice. The pancreatic juice converts starch into sugar, albumins into peptones, and emulsionizes fats, so that all these kinds of food are rendered capable of absorption. The process is aided by the intestinal juice. The bile also acts upon fats, and thus the food is formed into the *chyle*, which is absorbed into the system by the capillary vessels called *lacteals* (see *Chyle, Chyme*), while the non-nutritious matters pass down the intestinal canal and are carried off.

Digit (dij'it; Lat. *digitus*, a finger), in arithmetic, any one of the ten numerals, 1, 2, 3, 4, 5, 6, 7, 8, 9, 0. Digit is also a measure of a finger's breadth, equal to ¾ inch.—*Digit*, in astronomy, is the measure by which we estimate the quantity of an eclipse. The diameter of the sun or moon's disk is conceived to be divided into twelve equal parts, called *digits;* and according to the number of those parts or digits which are obscured, so many digits are said to be eclipsed.

Digitalin (dij-i-tal'in), a vegetable glucoside, the active principle of the *Digitālis purpurĕa* or foxglove. It is white, difficult to crystallize, inodorous, has a bitter taste, and is a strong poison.

Digitalis (dij-i-tal'is), a genus of plants, nat. order Scrophulariaceæ, containing about twenty species of tall herbs, natives of Europe and Western Asia. The purple foxglove (*D. purpurĕa*) is a common wild flower in Britain, and several species are grown in American gardens. Digitalin, also preparations of digitalis leaves, are used as cardiac stimulants and diuretics.

Digitate (dij'i - tāt), in botany, branched out into divisions resembling fingers, said of leaves or roots.

Digitigrada (dij-it-i-grā'da), a section of the Carnivora, so called from their walking on the ends of their toes; as distinguished from the Plantigrada, which, like the bear, place the whole foot upon the ground. This tribe includes the weasel, dog, cat, etc.

Digitorium (dij-i-tō'ri-um), a small portable dumb instrument having a short keyboard with five keys like those of a piano, used by pianoplayers for practice, to give strength and flexibility to the fingers.

Digne (dēn'y'), a town of France capital of the department of Basses-Alpes, picturesquely situated on a mountain slope, 60 miles northeast of Marseilles. Pop. 4628.

Dihong (dē-hong'). See *Brahmaputra.*

Dijon (dē-zhōŋ), a town in Eastern France, capital of the department Côte-d'Or, in a fertile plain, at the foot of a range of vine-clad slopes, formerly surrounded by ramparts, which now furnish beautiful promenades. At some distance it is surrounded by a series of forts. Some of the buildings belong to the period when Dijon was capital of the dukedom of Burgundy, the chief being the cathedral, a building of vast extent with a lofty wooden spire above 300 feet high; the churches of Nôtre Dame and St. Michael; the ancient palace of the dukes of Burgundy, now used as the hôtel de ville and museum; and the *palais de justice*, formerly the parliament house of Burgundy. It has important educational institutions and a valuable library. Industries: woolens, hosiery, candles, mustard, vinegar, chemicals, paper-hangings, etc., tanneries, foundries, machine factories, cotton and oil mills. The trade is considerable, particularly in the wines of Burgundy. Pop. (1911) 76,847.

Dika (dē'ka), a vegetable fat obtained from the seeds of a W. African tree, genus *Irvingia*, used in making fine soaps.

Dikamali (dē-ka-má'li), a resin exuding from Indian trees, genus *Gardenia*, a solution of which is used to dress wounds and open sores.

Dike (dīk), or Dyke, a word variously used in different localities to represent a ditch or trench, and also an embankment, rampart, or wall. It is specially applied to an embankment raised to oppose the incursions of the sea or a tidal river, the dikes of Holland being notable examples of work of this kind. These are often raised 40 feet above the high-water mark, and are wide enough at the top for a common roadway or canal, sometimes for both. The Helder Dike, one of the largest, is about 6 miles in length and involves an annual outlay of over $30,000.

Dike, Dyke, in geology, a term applied to intrusions of igneous rock, such as basalt, greenstone, etc., which fill up veins and fissures in the stratified systems, and sometimes project on the surface like walls.

Dilapidation (di-lap-i-dā'shun), in English law, is where an incumbent of a church living suffers the parsonage house or outhouses to fall down, or be in decay for want of necessary repairs; or it is the pulling down or destroying any of the houses or buildings belonging to a spiritual living, or destroying of the woods, trees, etc., appertaining to the same. An outgoing incumbent (or his heirs) is liable for dilapidation to his successor.

Dilemma (di-lem'a; from Gr. *dis*, twice, and *lēmma*, an assumption), in logic, an argument in which the same conclusion may be drawn from two contrary propositions. We append one of the most famous of the classical dilemmas. A young rhetorician said to an old Sophist: 'Instruct me in pleading and I shall pay you when I gain a cause.' The master sued for the reward, and the scholar eluded the claim by a dilemma. 'If I gain my cause I shall not pay you, because the award of the judge will be against you. If I lose it I may withhold it, as I shall not have gained a cause.' The master replied: 'If you gain you must pay me, because you promised to pay me when you gained a cause; if you lose you must pay me, because the judge will award it.' The two results which are found equally objectionable are called the 'horns' of the dilemma.

Dilettante (di-let-tän'tā), an Italian expression, signifying a lover of the arts and sciences, who devotes his leisure to them as a means of amusement and gratification, being thus nearly equivalent to *amateur*. In 1734 a number of gentlemen founded in London the Dilettanti Society which published a splendid work on *Ionian Antiquities*, 1769–1840; *Specimens of Ancient Sculpture, Ægyptian, Etruscan, Greek and Roman*, 1809, 1835; the *Temples of Ægina and Bassæ*, 1860, etc.

Dilke (dilk), SIR CHARLES W., an English official and author, born at Chelsea in 1843. He entered Parliament as a radical in 1868 and in 1882 became president of the local government board, with a seat in the cabinet. He wrote *Problems of Greater Britain*, *Army Reform*, *The British Empire*, and other works. His wife, Emily F. Dilke, is an able art critic and author of *The Renaissance of Art in France*, *Art in the Modern State*, etc. Died 1911.

Dill (dil), an umbelliferous plant, *Anēthum graveŏlens*, a native of the southern countries of Europe, the fruits, commonly but erroneously called seeds, of which are moderately warming, pungent, and aromatic, and are employed medicinally as a carminative. In appearance it resembles the fennel. Dill-seeds yield dill-water and an essential oil, when distilled with water. Dill-water is used as a remedy in flatulency and gripes of children.

Dilleniaceæ (dil-en-i-ā'se-ē), an order of plants, chiefly fine trees, inhabiting the East Indies, allied to Ranunculaceæ and Magnoliaceæ.

Dillingen (dil'ing-en), an old town of Bavaria, on the Danube, 24 miles northwest of Augsburg. It was long the seat of a Jesuit university, and the castle was formerly the ordinary residence of the Bishop of Augsburg. Pop. (1905) 6078.

Dillon (dil'un), JOHN, politician, was born of Irish parentage in New York in 1851, educated at the Catholic University of Dublin, and early identified himself with the Parnellite movement for reform in Irish affairs. He was elected to Parliament for County Tipperary in 1880 and soon became prominent there for the violence of his language. In Ireland his speeches were so ultra-radical that they led to his imprisonment three times between 1881 and 1888. He became one of the most prominent promoters of the 'Plan of Campaign' in Irish agitation, and in 1896 succeeded Justin McCarthy as chairman of the main section of the Irish Nationalist party.

Dilman (dēl-mān'), a town of Persia, province of Azerbijan, 75 miles west of Tabreez. Pop. estimated at 15,000.

Dilolo (dē-lō'lo), a small lake in Central S. Africa, lat. 11° 30′ S.; regarded as the source of the Zambesi.

Dilo-oil (dē'lo-oil), an oil obtained from the poon-tree of India, also called poon-seed oil. See *Poon*.

Diluents (dil'ū-ents), in medicine, are those substances which are taken to increase the proportion of fluid in the blood. They consist of water and watery liquors.

Diluvium (di-lō'vi-um), the name formerly given by geologists to certain gravels and comparatively recent deposits, which seem to have been the result of a rush of water or *deluge*.

Dime (dīm; French, *dime*, Lat. *decimus*, tenth), the term for the tenth part of a dollar or ten-cent piece in the United States of America, a silver coin whose English equivalent is about 5*d*.

Diminutive (di-min'ū-tiv), in grammar, a word having a special affix which conveys the idea of littleness, and all other ideas connected with this, as tenderness, affection, con-

tempt, etc. The opposite of *diminutive* is *augmentative*. In Latin, diminutives almost always ended in *lus*, *la*, or *lum*; as *Tulliola*, *meum corculum*, little Tullia, my dear or little heart; *homunculus*, a manikin. The Italian is particularly rich in diminutives and augmentatives, such compound diminutives as *fratellinucciettinetto* (a diminutive of *frate*, brother) being sometimes employed. Among English diminutive affixes are *kin*, as in *manikin*, a little man; *pipkin*, a little pipe; *ling*, as in *gosling*, a little goose; *darling*, that is, *dearling*, or little dear; and *et*, as in *pocket*, from *poke*, a bag or pouch; *tablet*, a little table. Diminutives are also formed, in colloquial and familiar language, by adding *y* or *ie* to the names, as *Charley*, *mousie*, etc.

Dimity (dim'i-ti), a stout cotton fabric, ornamented in the loom either by raised stripes or fancy figures. It is usually employed white, as for bed and bedroom furniture.

Dimorphism (dī-morf'izm), in crystallography, the crystallization of a body in forms belonging to two different systems, or incompatible forms of the same system, a peculiarity exhibited by sulphur, carbon etc.

Dimorphism, in botany, the condition when analogous organs of the same species appear under two very dissimilar forms. Thus the common primrose occurs in two forms, one having long stamens and a short pistil, the other a long pistil and short stamens.

Dinajpur (dē'näj-pōr), a town of Bengal, Hindustan, capital of a district of the same name, 205 miles north of Calcutta; pop. 13,430. The district covers an area of about 4118 square miles; pop. 1,567,080.

Dinan (dē-näṇ), a town of France department of Côtes-du-Nord (Brittany), on the Rance, 14 miles south of St. Malo. It stands on a steep hill nearly 200 feet above the river, is surrounded by high old walls pierced with four gates, and is a picturesque and interesting old place. Pop. (1911) 11,410.

Dinant (dē-näṇ), a town of Belgium, in the province and 14 miles s. of Namur; picturesquely and strongly situated on the Meuse, a place of antique appearance. The town-house was once the palace of the Princes of Liège. Pop. (1904) 7674.

Dinapur (dē'nä-pūr), a town of Patna district, Bengal, Hindustan, on the right bank of the Ganges, about 12 miles w. w. of Patna. It is a cantonment and military headquarters of the district with extensive barracks. The environs are studded with handsome bungalows. Pop. with cantonment, 33,700.

Dinar (dē-nar'; L. *denarius*), formerly an Arab gold coin, also a Persian coin; at present the chief Servian coin, value 1 franc.

Dindigal (din-di-gul'), a town of Madras Presidency, Madura district, India, with a fort on a rocky height. Pop. (1905) 25,182.

Dindorf (din'dorf), WILHELM, a German classical scholar, born in 1802, lived most of his life at Leipzig, and died in 1883. His chief publications were editions of the Greek dramatists and works elucidative of them and other Greek writers.

Dingo (ding'gō), the native wild dog of Australia (*Canis Dingo*), of a wolf-like appearance and extremely fierce. The ears are short and erect, the tail rather bushy, and the hair of a reddish-dun color. It is very destructive to the flocks, killing more than it eats. Its remains have been found fossil, but the fact of its having been the only placental mammal in this continent renders its indigenous character doubtful.

Dinitronaphthol (dī-nī-trō-nap'thol). See *Naphthyl*.

Dinoceras (dī-nō'se-ros; Gr. *deinos* terrible, *keras*, a horn), a fossil mammal found in the Eocene strata of N. America, in some respects akin to the elephant and of equal size, but without a proboscis. Its bones were very massive; it had two long tusks in the upper jaw, three pairs of horns, and the smallest brain proportionally of any known mammal.

Dinornis (dī-nor'nis; Gr. *deinos*, terrible, *ornis*, a bird), an extinct genus of large wingless birds—classed among the Struthionidæ or ostrich tribe — the bones of five species of the smallest which have been found in New Zealand. The largest must have stood at least 14 feet in height, several of its bones being at least twice the size of those of the ostrich. The

Dinornis (pelvic and leg bones and outline of body).

body seems to have been even more bulky in proportion, the tarsus being shorter and stouter in order to sustain its weight. They do not appear to have become extinct until the seventeenth or eighteenth century, and are spoken of as *moas* by the natives, who buried the eggs with their dead as provision for their journey to the other world.

Dinosauria (dī-nō-są'ri-a; Gr. *deinos*, terrible, and *sauros*, a lizard), a group of colossal lizards, resembling the pachydermatous mammals in general appearance, but in reality intermediate between the struthious birds and lizards. The majority, as the Megalosaurus, which attained to 40 feet in length, were carnivorous; the Iguanodon, however, was herbivorous. They were the land reptiles of the Jurassic, Wealden and inferior Cretaceous continents.

Dinotherium (dī-no-thē'ri-um; Gr. *deinos*, terrible; *thērion*, beast), a genus of extinct gigantic mammals, the remains of which occur in Tertiary formations in several parts of Europe. The largest species (*D. giganteum*) is calculated to have attained the length of 18 feet. It had a proboscis and also two tusks placed at the anterior extremity of the lower jaw, and curved downwards somewhat after the manner of those in the upper jaw of the walrus. The zoological position of the dinotherium is that of a proboscidean allied to the elephant. The skull, molar teeth and scapular bone are the only portions yet discovered. Kaup regards it as intermediate between the mastodons and tapirs and terrestrial; while Blainville and Pictet regard it as allied to the sea-cows, and inhabiting the embouchure of great rivers.

Dinotherium restored.

Diocese (dī'ō-sēs; Greek, *dioikēsis*, administration), the circuit or extent of a bishop's jurisdiction. Each English diocese is divided into archdeaconries, each archdeaconry (nominally) into rural deaneries and each deanery into parishes. See *Bishop*.

Diocletian (dī-o-kle'she-an; C. VALERIUS DIOCLETIANUS, surnamed *Jovius*), a man of mean birth, a native of Dalmatia, proclaimed Emperor of Rome by the army 284 A.D. He defeated Carinus in Mœsia (286), conquered the Allemanni, and was generally beloved for the goodness of his disposition, but was compelled by the dangers threatening Rome to share the government with M. Aurelius Valerius Maximian. In 292 C. Galerius and Constantius Chlorus were also raised to a share in the empire, which was thus divided into four parts, of which Diocletian administered Thrace, Egypt, Syria and Asia. As the result of his reconstitution of the empire there followed a period of brilliant successes in which the barbarians were driven back from all the frontiers, and Roman power restored from Britain to Egypt. In 305, in conjunction with Maximian, he resigned the imperial dignity at Nicomedia, and retired to Salona in Dalmatia, where he cultivated his garden in tranquillity until his death in 313. In the latter part of his reign he was induced to sanction a persecution of the Christians.

Diodati (de-o-dā'tē), GIOVANNI, an Italian Protestant divine, born at Lucca, about 1576, of a noble Catholic family. He was for some time professor, first of Hebrew, then of theology, at Geneva, and in 1619 represented the Genevan clergy at the Synod of Dort, and aided in drawing up the Belgic confession of faith. He is most celebrated for a translation of the Bible into Italian, which is superior to his translation of it into French. He died at Geneva in 1649.

Diodon (dī'o-don). See *Globe-fish*.

Diodorus (dī-o-do'rus) OF ARGYRIUM, in Sicily, and therefore called *Siculus;* a Greek historian in the time of Julius Cæsar and Augustus. His universal history, in the composition of which he traveled through a great part of Europe and Asia, occupied him thirty years, and consisted of 40 books, but only books 1-5 and 11-20, with certain fragments, are now extant.

Dicœcious (dī-ē'shus; Gr. *di*, double, *oikos*, a house), in botany a term applied to plants which have flowers with stamens on one individual and those with pistils on another; as opposed to *monœcious*. The willow, the yew, the poplar, etc., are dicœcious.

Diogenes (dī-oj'e-nēz) OF APOLLONIA (Crete), known also as the *Physicist*, a Greek philosopher of the fifth century B.C., who belonged to the Ionian school, and considered air as the element of all things.

Diogenes, OF SINOPE (si-nō'pē; on the Black Sea), the most famous of the Cynic philosophers, born

about 412 B.C. Having been banished from his native place with his father, who had been accused of coining false money, he went to Athens, and thrust himself upon Antisthenes as a disciple. Like Antisthenes, he despised all philosophical speculations, and opposed the corrupt morals of his time; but while the stern austerity of Antisthenes was repulsive, Diogenes exposed the follies of his contemporaries with wit and good humor. As an exemplar of Cynic virtue he satisfied his appetite with the coarsest food, practiced the most rigid temperance, walked through the streets of Athens barefoot, without any coat, with a long beard, a stick in his hand, and a wallet on his shoulders, and by night, according to the popular story, slept in a tub (or large earthenware vessel). On a voyage to the island of Ægina he fell into the hands of pirates, who sold him as a slave to the Corinthian Xeniades in Crete. The latter emancipated him, and entrusted him with the education of his children. He attended to the duties of his new employment with the greatest care, commonly living in summer at Corinth and in winter at Athens. He died in 323 B.C., at a great age. Of the many stories related of him the majority are probably fictions; many indeed are chronologically impossible. His enemies accused him of various scandalous offenses, but there is no ground for supposing him guilty of any worse fault than that of elevating impertinence to the rank of a fine art.

Diogenes Laërtius, author of a sort of history of philosophy in Greek, appears to have been born at Laerte, in Cilicia, and to have lived towards the close of the second century after Christ; but no certain information exists either as to his life, studies, or age. The work is divided into ten books, and bears in MSS. the title, *On the Lives, Doctrines and Apothegms of those who have distinguished themselves in Philosophy.* It is full of absurd and improbable anecdotes, but contains valuable information regarding the private life of the Greeks, and many fragments of works now lost. It was the foundation of the earlier modern histories of philosophy.

Diomedea (dī-o-me-dē'a), a genus of birds, including the various species of albatross (which see).

Diomede Islands (dī'o-mēd), a group of three small islands in Bering Strait, and midway between Asia and America.

Diomedes (dī-o-mē'dēz), in Greek mythology, (1) A king of the Bistŏnes, who fed his horses on human flesh, and used to throw all strangers who entered his territories to those animals to be devoured. He was killed by Hercules, who carried off the horses. (2) One of the heroes at the siege of Troy, the son of Tydeus and Deïpyle, and king of Argos, one of the suitors of Helen. After she was carried off Diomedes engaged in the expedition against Troy, in which his courage and the protection of Pallas rendered him one of the most distinguished heroes. He wounded Aphrodite and Ares, and thrice assailed Apollo; and by carrying off the horses of Rhœsus from the enemies' tents, and aiding Ulysses in the removal of Philoctetes from Lemnos, he fulfilled two of the conditions on which alone Troy could be conquered. Finally he was one of the heroes concealed in the wooden horse by whom the capture of Troy was at length accomplished. Different accounts were given of his after-life. He is often called *Diomede.*

Dion (dī'on) OF SYRACUSE, in Greek history, a connection by marriage of the elder and the younger Dionysius, tyrants of Syracuse, over whom he long exercised great influence. He attempted to reform the younger Dionysius (which see), but his enemies succeeded in effecting his banishment. He afterwards returned and made himself ruler of the city, but became unpopular, and in 353 B.C. one of his followers, Callipus of Athens, caused him to be assassinated.

Dionæa (dī-on-ē'a), a genus of plants, nat. order Droseraceæ. Only one species is known, *D. muscipŭla* (Venus' fly-trap), a native of the sandy savannas of Carolina and Florida. It has a rosette of root leaves, from which rise a naked scape bearing a corymb of fairly large, white flowers. The leaves have a dilated petiole and a slightly stalked 2-lobed lamina, with three short, stiff bristles on each lobe. The bristles are remarkably irritable, and when touched by a fly or other insect the lobes of the leaf suddenly close on and capture the insect. It is said to digest the food thus captured by means of a fluid which dissolves it exactly like ordinary gastric juice.

Dion Cassius (dī'on kash'e-us), or DIO CASSIUS, a Greek historian, born about 155 A.D. at Nicæa, in Bithynia. After accompanying his father to Cilicia, of which he held the administration, he came to Rome about 180, and obtained the rank of a Roman senator. On the accession of Pertinax Dion was appointed prætor, and in the

reign of Caracalla he was one of the senators whom it had become customary to select to accompany the emperor in his expeditions, of which he complains bitterly. In 219 he was raised to the consulship, and about 224 became pre-consul of Africa. In 229 he was again appointed consul; but feeling his life precarious under Alexander Severus, he obtained permission to retire to his native town of Nicæa. The period of his death is unknown. The most important of his writings, though only a small part is extant, is a *History of Rome*, written in Greek and divided into eighty books, from the arrival of Æneas in Italy and the foundation of Alba and Rome to A.D. 229.

Dion Chrysostom (kris'os-tom), a Greek sophist and rhetorician and a favorite of Trajan; born in A.D. 50; died about A.D. 110. Eighty of his orations (in excellent Attic) have been preserved.

Dionysia (dī-o-nish'i-a). See *Bacchanalia*.

Dionysius (dī-ō-nish'e-us), St., a disciple of Origen, and patriarch of Alexandria in 248 A.D. He was driven from the city in 250, and in 257 was banished to Libya, but was restored in 260. Died in 265 A.D.

Dionysius, OF HALICARNASSUS, in Caria, a Greek critic and teacher of eloquence, born about 70 B.C. He went to Rome about 30 B.C., where he wrote his *Roman Antiquities*, in twenty books, in which he relates (in Greek) the early history of Rome and its government up to the times of the first Punic war. We have the first nine books of this work entire, the tenth and eleventh nearly so, and some fragments of the others. His rhetorical writings are of greater value, especially his essays on the Greek orators. He died about 6 B.C.

Dionysius, THE AREOPAGITE, that is one of the judges of the Areopagus, at Athens, a convert to Christianity by the Apostle Paul about the middle of the first century, and the first bishop at Athens, where he suffered martyrdom. Certain writings formerly ascribed to him consist of obscurely written treatises on mystical subjects. Scotus Erigena translated them into Latin. In France, where a certain Dionysius (see *Denis, St.*) established the first Christian community at Paris in the third century, they were readily received, this Dionysius being without further inquiry taken for the Areopagite, because the origin of the Gallican Church could thus be carried back to the first century; and France gained a patron saint who was a martyr and the immediate disciple of an apostle.

Dionysius, THE ELDER, in Greek history, tyrant or absolute ruler of Syracuse, born about 430 B.C. of obscure parentage. He obtained the rank of general, and afterwards of commander-in-chief; and gaining the support of the army, he seized the supreme power in Syracuse, though only twenty-five years of age. He extended his rule over other cities in Sicily; and after some successes and reverses in the struggle with the Carthaginians he gained a complete victory over them under the walls of Syracuse. In his expeditions into Lower Italy he reduced the city of Rhegium by famine (387). After another short war with Carthage he lived some time in peace, occupied with writing poems, tragedies, etc., with which he contended for the Olympian prize. In 368 he commenced a new war against the Carthaginians, but failed to drive them entirely out of Sicily. He is said to have died from a potion administered at the instigation of his son Dionysius the Younger (367 B.C.).

Dionysius, THE LITTLE (so called on account of his short stature), a Scythian monk who was abbot of a monastery at Rome in the beginning of the sixth century, and died about the year 530, according to others about 545, celebrated as the author of the computation of time from the Christian era. This mode of computation, however, was not publicly used until the eighth century.

Dionysius, THE YOUNGER, a tyrant of Syracuse, who, in 367 B.C., succeeded his father, Dionysius the Elder. For the purpose of recalling him from the excesses to which he was addicted Dion persuaded him to invite Plato to his court, but the influence of the philosopher effected no permanent change. Becoming suspicious of Dion, the tyrant banished him and confiscated his property, but in 357 B.C. Dion made himself master of Syracuse. Dionysius fled to Locri, but after the murder of Dion recovered his power in Syracuse. His misfortunes, however, had rendered him more cruel, and Timoleon, who came to Syracuse with aid from Corinth against the Carthaginians, deposed him in 344 B.C. He was carried to Corinth, where he is said to have gained a living by giving lessons in grammar, or as one of the attendants on the rites of Cybele.

Dionysus (dī-o-nī'sus), the original Greek name of the god of wine, the name Bacchus, by which he was called both by the Greeks and

the Romans, being at first a mere epithet or surname. See *Bacchus.*

Diophantus (dī-o-fan'tus) OF ALEXANDRIA, the first Greek writer on algebra, flourished, according to some authorities, about the middle of the fourth century after Christ. He left behind him thirteen books of *Arithmetical Questions*, of which only six are extant; and a work on *Polygon Numbers.*

Diopside (dī-op-sīd), a rare mineral, a variety or subspecies of augite, occurring in prismatic crystals of a vitreous luster, and of a pale green, or a greenish or yellowish white.

Diopsis (dī-op'sis), a genus of dipterous insects, or two-winged flies, the members of which are remarkable for the immense prolongation of the sides of the head, the head appearing as if it were furnished with two long horns, each having a knot at its apex.

Dioptase (dī'op-tās), emerald copper ore, silicate of copper, a translucent mineral, occurring crystal-like in six-sided prisms.

Dioptrics (dī-op'triks), that part of optics which treats of the refraction of light passing through different mediums, as through air, water or glass, and especially through lenses. These phenomena, however, are now more commonly treated under the head of *refraction.* See *Refraction.*

Diorama (dī-ō-ra'ma), a mode of painting and of scenic exhibition invented by Messrs. Daguerre and Bouton, and first exhibited in 1823. It secures a higher degree of illusion than the ordinary panorama, by a mode of uniting transparent painting to the usual opaque method, and causing the light to fall upon the picture both from *before and behind.* At the same time, by means of colored transparent blinds, suspended both above and behind the picture, the rays of light can be intercepted and made to fall at pleasure in graduated tints upon every part of the picture in succession.

Diorite (dī'o-rīt), a tough trap-rock, sometimes of a whitish color speckled with black or greenish black, sometimes very dark in color, consisting of hornblende and feldspar.

Dioscoreaceæ (dī-os-kor-e-ā'se-ē), a nat. order of endogenous plants, with alternate reticulate-veined leaves, tuberous root-stocks and twining stems. The flowers are small and unisexual. There are six genera, with about 100 species. The typical genus is *Dioscorea*, which includes the yam. Black bryony is the only British representative. The tortoise plant or elephant's foot occurs in South Africa. See *Yam.*

Dioscorides, PEDANIUS (dī-os-kor'i-dēz, pe-dā'ni-us), born in Cilicia in the first century of the Christian era, a Greek physician, author of a celebrated work on *Materia Medica*, in five books, particularly valuable in regard to botany.

Dioscuri (dī-os-kū'ri). See *Castor and Pollux.*

Diospyros (dī-os'pi-ros), a large genus of trees or shrubs, natives of the warmer regions of the world, nat. order Ebenaceæ. The trees of this genus supply ebony wood. That from Ceylon is the wood of *D. Ebēnum;* from India, of *D. melanoxylon* and *D. Ebenaster;* and that from Mauritius of *D. reticulāta.* The *D. Lotos* is the Indian date-plum. It is by some supposed to have been the lotus tree of the ancients, whose fruit was said to produce oblivion.

Dip, of the horizon, an allowance made in all astronomical observations of altitude for the height of the eye above the level of the sea.

Dip, in geology, the inclination or angle at which strata slope or *dip* downwards into the earth. The degree of inclination or amount of the dip, which is easily measured by a special instrument, is determined by the angle which a line drawn perpendicular to the direction of the stratum makes with the horizon. The line in which such strata cut the surface is called the *strike*, and is always at right angles to the dip.

Diphtheria (dif-thē're-a; Greek, *diphthera*, a skin or membrane), an infectious and contagious disease, in which a false membrane is formed in the throat, and the patient suffers from fever and toxemia. The disease occurs most frequently in children, and is common in schools, asylums, and tenements. The cause of the infection is a specific bacillus which may be found in the membrane referred to, also in the discharges from the nose and throat, and even in the blood. Diphtheria is very contagious, and may be conveyed by contact with a person suffering from the disease, or by a third person, or by fomites (toys, hangings, etc.), or by domestic animals; food, particularly milk, is credited with being a method by which the disease is disseminated. The disease is a very serious one, the patient being poisoned by the toxins produced by the infecting bacillus. It is a mistake to view the condition as a local one; the membrane formed is not the whole of the disease. Formerly

the term 'croup' was used in connection with diphtheria and diseases having some symptoms in common with it; but now it is considered advisable to banish the term croup altogether, or at any rate to limit it to those conditions which are not caused by the bacillus of diphtheria. Diphtheria may be complicated by other diseases, and it is liable to be followed by paralysis. The positive diagnosis of the condition is made by finding the bacilli in the membrane or in the discharges from the nose or throat. Convalescents from the disease may carry the bacilli in their nose or throat for a long period of time and may thus act as '*carriers*' of the infection to susceptible persons. The treatment of diphtheria consists in the prompt administration of antitoxin as soon as the diagnosis is made; in cases of doubt the antitoxin should be administered; it should also be used (in smaller dosage) on those who are exposed to the disease. The introduction of the antitoxin lessens the fever, diminishes the size of the membrane, and shortens and renders less severe the general toxic symptoms. By the use of antitoxin the death rate has been reduced from over 50 per cent to about 10 or 15 per cent. The patient should be isolated as far as possible; he should be put to bed; surrounding conditions should be made as hygienic as possible; the food must be concentrated, fluid, and easily digested; an antiseptic gargle or wash may be required for the throat and nose; tonics and stimulants are indicated. Intubation or trachetomy may be required.

Diphthong (dif'thong), a coalition or union of two vowels pronounced in one syllable. In uttering a proper diphthong both vowels are pronounced; the sound is not simple, but the two sounds are so blended as to be considered as forming one syllable, as in *void*, *bough*. The term improper diphthong is applied to the union of one syllable of two or more vowels, of which only one is sounded, as in *bean*.

Diplodocus (di-plod'o-kus), a genus of gigantic fossil reptiles of the order Dinosauria, found in western North America. There is a fine specimen in the Carnegie Museum at Pittsburgh.

Diploma (di-plō'ma; Gr. *diplōma*, from *diploō*, to double or fold), literally a document folded but once, and therefore divided into two parts. It is used to signify a document signed and sealed, in which certain rights, privileges, dignities, etc., are conferred, especially a university degree.

Diplomacy (di-plō'ma-si), the art of conducting negotiations, arranging treaties, etc., between nations; the branch of knowledge which deals with the relations of independent states to one another; the agency or management of envoys accredited to a foreign court; the forms of international negotiations. The Cardinal de Richelieu is generally considered as the founder of that regular and uninterrupted intercourse between governments which exists at present between almost all the Christian powers; though the instructions given by Machiavelli to one of his friends, who was sent by the Florentine Republic to Charles V (Charles I of Spain) show that Richelieu was not the first to conceive the advantages that might be derived from the correspondence of an intelligent agent accredited at the seat of a foreign government. Diplomatic agents are of several degrees: 1, ambassadors; 2, envoys extraordinary and ministers plenipotentiary; 3, ministers resident; 4, *chargés d'affaires*; 5, secretaries of legation and *attachés*. Their rank was regulated in Europe, in the above order, by the congress assembled at Vienna in 1814. Among the European powers it is agreed that of ministers of the same rank he who arrives first shall have the precedence over his colleagues. The United States was long represented by ministers only, but now sends ambassadors to the leading countries of Europe.

Diplomatics (di-plo-mat'iks), originally the science of deciphering ancient MSS. It laid down certain principles for the systematic examination of public documents, and taught the forms and styles adopted in them, the titles and rank of public officers subscribing them, etc. Among the earliest exponents of diplomatics were Papebroeck, an Antwerp Jesuit (1675), and Mabillon (1681).

Diplophonia (dip-lō-fō'ni-â), the simultaneous production of two sounds of different pitch, due to partial paralysis of the larynx.

Diplopterus (di-plop'ter-us), a genus of fossil ganoid fishes, belonging to the Old Red Sandstone.

Diplozoon (di-plō-zō'on), a parasitic trematode worm which infests the gills of the bream, and which appears to be formed of two distinct bodies, male and female, united in the middle, and resembling an X.

Dipnoi (dip'noi; Gr. *di*, *dis*, double, and *pnoē*, breath), an order of fishes, including only the singular mudfishes (*Lepidosiren*), important as ex-

hibiting the transition between fishes and the amphibia. Formerly Lepidosiren was reckoned the lowest of the amphibia, now it constitutes the highest order of fishes. The body is fish-like in shape, covered with small, horny scales of a cycloid character; the pectoral and ventral fins are represented by two pairs of long, filiform organs; the heart has two auricles and one ventricle, and the respiratory organs are twofold, consisting of ordinary gills opening externally, and of true lungs—formed by the modified swimming-bladder—communicating with the œsophagus by means of an air duct or trachea, whence the name. They are also called *Protopteri*. The combination of respiratory organs is similar to that which is presented by the tailed amphibians with persistent gills (perennibranchiate), as the axolotl. This interesting group is allied to the ganoids through the Ceratodus of Queensland. The *L. paradoxa* is found in the Amazon; *L. annectens* in the Gambia.

Dippel (dip'el), JOHANN CONRAD, a German theologian and alchemist, born in 1672. He studied theology, defended the orthodox party against the Pietists, led a turbulent life at Strasburg, and then joined the Pietists until an unfortunte tractate placed him in disfavor with both parties. He then turned his attention to alchemy, and during a residence at Berlin produced the oil called after him (see next article), from which indirectly followed the discovery of Prussian or Berlin blue. After various adventures and wanderings in Sweden, Denmark and Germany he died in 1734.

Dippel's Oil, the rectified form of the black fetid oil, containing ammoniac carbonate, which can be obtained by the destructive distillation of animal matter, such as stag's-horn, ivory, or blood. The cruder form was used in medicine, despite its appearance and odor, until Dippel refined it. His oil was formerly prescribed as an antispasmodic and diaphoretic, but is no longer used in medicine.

Dipper (dip'er), a bird of the genus *Cinclus*, allied to the thrushes. The common dipper, water-ouzel, or water-crow (*Cinclus aquaticus*), is a familiar European bird; it is about 7 inches in length, with a very short tail, small rounded wings, and large, powerful feet; the bill is of moderate length, straight and slender. The male has the upper part of the body dark brown, the throat and breast white, belly rusty. The dipper frequents streams, and feeds largely on water insects and larvæ. It can dive and walk under water, effecting its progress by grasping the stones with its feet. The song is sweet and lively. Other species are found in Asia and America.

Dipper (*Cinclus aquaticus*).

Dipping-needle, or INCLINATION COMPASS, an instrument for showing the direction of one of the components of the earth's magnetism. In essentials the instrument consists of a light magnetized steel bar supported on a horizontal axis which passes, as nearly as possible, through the center of inertia of the bar. When a needle thus mounted is placed anywhere not in the magnetic equator, it dips or points downwards; and if the vertical plane, in which it moves, coincides with the magnetic meridian the position of the needle shows at once the direction of the magnetic force. The intersection of two or more directions found by making the experiment at different places, indicates the place of the magnetic pole.

Diprotodon (di-prō'to-don), a gigantic fossil marsupial of Australia, allied to the kangaroos.

Dipsacus (dip'sa-kus). See *Teasel*.

Dipsas (dip'sas), a genus of Asiatic and tropical American non-venomous serpents of the family Colubridæ, of very elongated form. With the ancients it was a serpent whose bite was said to produce a mortal thirst.

Dipsomania (dip-so-mā'ni-a; Gr. *dipsa*, thirst, and *mania*, madness), a term recently introduced to denote an insane craving for intoxicating liquors, when occurring in a confirmed or habitual form. It is often of hereditary origin, but may result from sunstroke, from some injury to the brain, or from disease. The only remedy appears to be seclusion, with enforced abstinence and healthy occupation. Homes for this purpose have been established in Britain and the United States.

Diptera (dip'te-ra), an order of two winged insects, of which the common house-fly and the blue-bottle are familiar examples. They are characterized by a body with slight coriaceous coverings, a trunk open beneath, and containing a sucker composed of two, four, or six lancet-shaped elongated scales, two palpi, antennæ almost always composed of three joints, large eyes, an abdomen of from four to seven distinct segments, tarsi with five joints, and two short clubbed appendages called *haltêres* or balancers, which seem to be the rudiments of the posterior pair in four-winged insects, and are kept in continual motion. All undergo complete metamorphosis, and all are oviparous except the Sarcophaga, which issue from their mother in shape of larvæ; and the Pupipara, which first make their appearance as nymphs. The greater number live on the sap of flowers, but some feed on blood, others fasten on other animals to lick up their perspiration, their sores, or various secretions.

Dipteraceæ (dip-ter-ā'se-ē), DIPTEROCARPEÆ, an important order of Asiatic exogenous, polypetalous trees, allied to the mallows (Malvaceæ). The different species produce a number of resinous, oily, and other substances; one, a sort of camphor; another, a fragrant resin used in temples; and others, varnishes; while some of the commonest produce pitches, and sal, valuable timber.

Diptych (dip'tik; Greek) originally signifies the same as *diploma*, something folded; the double tablets of metal, ivory, etc., used by the Greeks and Romans. Diptychs became important in the Christian church, in them being written the names of popes, and other distinguished persons who had deserved well of the church, to be mentioned in the church prayers. Diptychs also often contained pictures of Biblical scenes, etc.

Dipus. See *Jerboa*.

Dipyre (dī'pīr), a mineral consisting chiefly of silicate of alumina, with small proportions of the silicates of soda and lime. Its name indicates the double effect of fire upon it (Gr. *di*, double, *pyr*, fire) in producing first phosphorescence and then fusion.

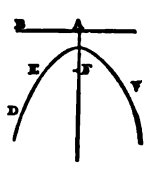
Diræ, or EUMENIDES. See *Furies*.

Directors (di-rek'turs), persons elected to meet together at short fixed intervals and consult about the affairs of corporations or joint-stock companies, and to advise and assist the manager. These are termed *Ordinary Directors*, as in many companies there is a body called *Extraordinary Directors*, who have little or no business functions, and are chosen, as a rule, on account of their social position imparting a degree of distinction to the concern. Directors are appointed by a general meeting of the shareholders in the undertaking, and a certain number of them, usually a third, retire every year. Ordinary directors are granted a certain remuneration for their services. The duties and responsibilities of directors are defined by the constitution of the company, or by the various acts of legislature affecting joint-stock and other companies.

Directory (di-rek'to-ri), the name given to a body of five officers to whom the executive authority in France was committed by the constitution of the year III (1795). The two legislative bodies, called the *councils*, elected the members of the directory; one member was obliged to retire yearly, and his place was supplied by election. This body was invested with the authority, which, by the constitution of 1791, had been granted to the king. By the revolution of the 18th Brumaire the directory and the constitution of the year III were abolished. It was succeeded by the consulate.

Direct Primary, a method of nominating candidates for office now adopted in many of the States of the American Union. Under the former method conventions of elected delegates were held, who nominated the candidates, usually those selected by the party leaders. In the new method of direct primaries the candidates are voted for directly by the people, who thus have an immediate control over the results.

Directrix (di-rek'triks), in mathematics, a line perpendicular to the axis of a conic section, and so placed that the distance from it of any point in the curve is to the distance of the same point from the focus in a constant ratio; also, the name given to any line, whether straight or not, that is required for the description of a curve. The directrix of a parabola is a line perpendicular to the axis produced, and whose distance from the vertex is equal to the distance of the vertex from the focus. Thus A B is the directrix of the parabola V E D, of which F is the focus.



Directrix of a Parabola.

Dirk (dêrk), a kind of dagger formerly used as a weapon of offense

by the Highlanders of Scotland. Dirks are worn by midshipmen and cadets of the royal navy, and still form part of the full Highland costume.

Dirk-hartog Island, on the west coast of Australia, 45 miles long north to south, and 10 miles broad.

Dirt-beds, in geology, layers of ancient soil, such as those in the oölitic strata of the Isle of Purbeck (Dorset), which contain the stumps of trees that once grew in them.

Disability (dis-a-bil'i-ti), in law, incapacity to do any legal act. It is either *absolute*, which wholly disables the person; such as outlawry or excommunication—or *partial*, such as infancy, coverture, insanity, or drunkenness.

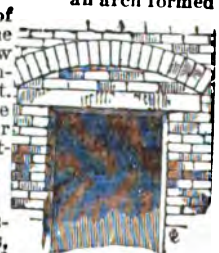
Disbanding (dis-band'ing), the breaking up of a regiment, or other body of military, and releasing them from service, when they are no longer required, or it may be on account of insubordination.

Disbarring (dis-bar'ing), expelling a barrister from the bar, a prerogative which, in England, is possessed by the benchers of each of the four Inns of Court. The party disbarred may lodge an appeal with the judges in their capacity of visitors.

Disc, DISK, the central part of a radiate compound flower surrounded by the ray. Also a part, sometimes cup-shaped, at the base of the stamens, consisting in some cases of rudimentary stamens, in others of the modified receptacle.—In astronomy the term is applied to the face or circular figure exhibited by the sun, moon, or a planet in the sky.

Discharge. See *Calico-printing.*

Discharging Arch (dis-charj'ing), an arch formed in the substance of a wall to relieve the part which is below it from the superincumbent weight. Such arches are commonly used over lintels and flat-headed openings.



Discharging Arch.

Disciples of Christ, or CHRISTIANS, sometimes called CAMPBELLITES, an American religious organization, had its beginning in 1809. See *Alexander Campbell.* The church numbers over two and a quarter million members.

Disclaimer (dis-klām'er), in its stricter legal sense, a plea containing renunciation or a denial of some claim alleged to have been made by the party pleading.

Disco (dis'kō), an island off the w. coast of Greenland, 70 miles long, averaging 50 miles wide, lat. about 70° N. It has large coal deposits.

Discophora (dis-kof'e-ra), a subclass of the Hydrozoa, comprising most of the organisms known as sea-jellies, jelly-fishes, sea-nettles, etc.

Discord (dis'kord), in music, a dissonant or inharmonious combination of sounds, so called in opposition to the *concord.* See *Dissonance.*

Discount (dis-kount), the charge made by a banker for interest of money advanced by him on a bill or other document not presently due. In advancing money on such security the banker deducts the charge for interest on his advance from the total amount represented on the security, pays the difference, which is called the *proceeds* of the bill, to the person parting with it, and collects the full amount to reimburse himself for outlay and interest at maturity. Popularly, the term *discount* is applied to any deduction from the full amount of an account made by the party to whom it is paid, especially on prompt or early payment. When a bill which has been *discounted* is paid by the acceptor before it is due, the discount allowed for repayment is called *rebate.*

Discovery (dis-kov'e-ri), in law, the act of revealing or making known any matter by a defendant in his answer to a bill in chancery. The word is also used in reference to the disclosure by a bankrupt of his property.

Discrase (dis'krās), an ore of silver, consisting of antimony and silver. It occurs in hexagonal prisms.

Discus (dis'kus), DISC, or DISK, among the Greeks and Romans a quoit of stone or metal, convex on both its sides, sometimes perforated in the middle.

Disease (diz-ēz'), any morbid state of the body, or of any organ or part of the body. Diseases are described as local or constitutional, idiopathic, symptomatic, epidemic, endemic, contagious, acute, chronic, etc. As to their classification, see *Nosology.* The influence of the parents on the organization of the child is so great that not only peculiarities of external form, but the peculiar constitution, the greater or less

activity and development of the organs, are found to pass from parent to child. As it is in the particular state of the several organs and functions that a very great part of diseases have their foundation, the liability to certain diseases may be inherited with the organic structure, and the son attacked by various complaints at the same period of life in which his father was. The most important hereditary defect is physical weakness. These diseases are called *hereditary;* but it is only the predisposition to them that is inherited. Hence the actual development of hereditary diseases requires certain coöperating circumstances. Constitutional diseases often depend on circumstances which affect the fœtus during pregnancy. Among the diseases, the predisposition to which is most frequently hereditary are scrofula, hæmophilia (especially bleeding at the lungs), and hemorrhoids, consumption, gout, gravel and stone, cancer, disorders of the mind, hysterical and hypochondriac affections, apoplexy, epilepsy and organic diseases of particular parts, especially of the heart. Inherited diseases are much more difficult to cure than those which originate in accidental external causes, and special care should therefore be taken to adopt an environment and mode of life calculated to counteract the inherited predisposition. As to the origin of certain diseases see *Germ Theory.*

Diseases of Plants, may be divided into two main classes: those produced by temperature, excess or deficiency of moisture and light, impure air, the composition of the soil, and other mechanical or chemical agencies; and those produced by other organized beings, whether belonging to the animal or vegetable world. Too high a temperature will produce an excitement inconsistent with healthy growth, while a low temperature destroys the connection between the cells, and is one of the chief causes of cancer. In the absence of light the chemical changes necessary to the complete development of the chlorophyll will not take place, and the plant is in consequence blanched. Tender tissues, however, frequently require protection from a too free admission of light. In tropical forests, unhealthy to man, certain vegetables find a congenial atmosphere, but in most cases pure air is indispensable, as shown by the difficulty of cultivating plants in the heart of towns. Few things are more prejudicial to plant life than excess of moisture, partly from its immediate action on the tender tissues of the roots, and partly from decomposition, but more than all, from the low state of temperature which is kept up at the very point where a certain degree of heat is essential. Diseases springing from the actions of other organisms may be classed as direct injuries, alterations of tissues from the presence of larvæ of insects, exhaustion from parasitic insects or plants, especially fungi.

Dishonor of a Bill (dis-on'ur), the refusal or neglect to accept or pay when due a bill of exchange, or promissory note, or draft on a banker. It is absolutely necessary that the holder of a dishonored bill should give immediate notice of the nonpayment to the drawers or endorsers.

Disinfectant (dis-in-fekt'ant) is any substance that destroys the germs and odors of contagious and infectious diseases. The most important for practical purposes are formaldehyde, chlorine, carbolic acid, sulphurous acid, Condy's fluids (containing respectively manganate and permanganate of potash), and Burnett's fluid, containing chloride of zinc. Carbolic acid is one of the most effective, needing, however, some little care in the handling, as it sometimes causes severe burns. It does not in its common form mix with water, but floats on the surface undiluted. For application to the skin Condy's fluid is one of the readiest preparations. In cases of infectious or contagious disease, disinfectants, such as chlorinated lime or carbolic acid, should at once be placed about the house, especially in the sickroom and in the passages and landing outside. A large sheet also should be nailed so as to hang across the door, and this should be kept constantly wet with carbolic acid. All excretions should be instantly disinfected and also the closet which receives them. In a country place it is best to bury them in a considerable depth of earth. Every article of clothing and furniture should be carefully treated, as the germs may lurk in them and break out after a lapse of months or years.

Disintegrator (dis-in'te-grā-tur), a machine for pulverizing and sometimes for mixing various materials, such as rock, asphalt, ore, artificial manures, sugars, corn, the ingredients of mortar, etc.

Disk. See *Disc.*

Dislocation (dis-lō-kā'shun), a surgical term applied to cases in which the articulating surfaces of the bones have been forced out of their proper relations. The particular dislocation takes its name either from the joint itself or its furthest bone, and is

called *compound* when accompanied with an external wound. The most common dislocations are those of the hip, shoulder, elbow, knee and ankle, and the chief obstacle to their reduction is the spasmodic and violent contraction of the muscles consequent upon them, the application of considerable force often being necessary to set the joint. Chloroform is of great use, not only in preventing pain, but in relaxing the muscles. The most dangerous dislocations are those of the bones of the spine.—In geology it signifies the displacement of parts of rocks or portions of strata from the situations they originally occupied.

Dismal Swamp, a large tract of marshy land, beginning a little south of Norfolk, Virginia, and extending into North Carolina, containing 150,000 acres; 30 miles long, from north to south, and 10 broad. This tract was formerly covered with trees, with almost impervious brushwood between them, but it has now in part been cleared and drained. In the midst of the swamp is a lake, called *Drummond's Pond*, 7 miles in length. A navigable canal through the swamp connects Chesapeake Bay and Albemarle Sound.

Dismas (dis'mas), St., the name of the penitent thief, according to mediæval legends.

Dispart (dis'part), the difference between the semidiameter of the base ring at the breech of a gun and that of the ring at the swell of the muzzle.

Dispensary (dis-pen'sa-ri), a public institution, primarily intended for the poor, where medical advice is given and medicines are furnished free, or sometimes for a small charge. It is distinguished from a hospital in having no beds. Dispensaries are found in most large towns in the United States and Europe. In the Old World they originated in monasteries. The oldest one in the United States was opened in New York in 1790.

Dispensation (dis-pen-s a' s h u n) is the act by which an exception is made to the rigor of the law in favor of some person. The pope may release from all oaths or vows, and may sanction a marriage within the prohibited degrees of the Mosaic law, or exempt from obedience to the disciplinary enactments of the canon law. In England the monarch claimed, in former times, a similar dispensing power in civil law, but the prerogative was so much abused by James II that it was abolished by the Bill of Rights. The power of commuting sentences in capital cases is the only form in which the dispensing power of the crown still exists. In ecclesiastical matters a bishop may grant a dispensation allowing a clergyman to hold more than one benefice or to absent himself from his parish.

Dispensatory (d i s-pen'sa-to-ri), the same as *Pharmacopœia* (which see).

Dispersion (dis-per'shun), an o p t i cal term applied to the angular separation experienced by the component rays of a pencil of light on emerging from a refracting medium whose surfaces are not parallel to each other, *e.g.*, the common prism. The length of the spectrum and the relative space occupied by the colored rays vary greatly according to the refracting medium, the spectrum from a prism of oil of cassia being two or three times longer than one formed by a glass prism.

Disposition (d i s-pō-z i s h' u n), in Scotch law, is, in its general acceptation, a deed by which a person provides for the general disposal of his property heritable and movable, after his death, equivalent to a will or testament; also a conveyance of property.

Disraeli, Benjamin. See *Beaconsfield*.

D'Israeli (diz-rā'e-li), Isaac, man of letters, and father of the well-known statesman, was born in Enfield, Middlesex, in 1766. His father, Benjamin D'Israeli, a descendant of a family of Spanish Jews which had settled at Venice in the fifteenth century to escape the Inquisition, came over to England in 1748 and made a large fortune. Isaac D'Israeli, however, showed a strong repugnance to commerce, and was finally permitted to follow his literary bent. An anonymous reply to Peter Pindar, entitled *On the Abuse of Satire*, was followed in 1791-1793 by the appearance of his *Curiosities of Literature*, the success of which determined much of his afterwork. His *Essay on the Literary Character* was published in 1795, and some time afterwards a volume of romantic tales, *The Loves of Mejnoun and Leila*. Between 1812 and 1822 appeared the *Calamities of Authors*, *Quarrels of Authors* and *Inquiry into the Literary and Political Character of James I*; the three being afterwards published collectively under the title of *Miscellanies of Literature*. In 1828 appeared the commencement of his *Life and Reign of Charles I*, a work completed in 1831. An affection of the eyes put an end to a projected life of Pope and a history of English Freethinkers, but in 1841 he published a selection from his MSS. un-

der the title of *Amenities of Literature*. He died in 1848. The greater part of his life was passed in his library.

Diss (dis), a town of England, Norfolk, on the slope of a hill 18 miles south by west from Norwich. It was formerly noted for the manufacture of 'Suffolk hempen cloth,' worsted yarn and knit hosiery. Pop. 3769.

Disseizin (dis-sē'zin), or DISSEISIN, in law, is the dispossessing one of a freehold estate, or interrupting his *seizin*. Of freeholds only can a seizin be had, or a disseizin done. Whether an entry upon lands is or is not a disseizin will depend partly upon the circumstances of the entry and partly upon the intention of the party, as made known by his words or acts.

Dissenters (dis-ent'ers), the common name by which in Britain all Christian denominations, excepting that of the Established Churches, are usually designated, though in acts of parliament it generally includes only Protestant dissenters, Roman Catholics being referred to under their specific name. The most important bodies of English dissenters are the different bodies of Methodists, the Congregationalists and the Baptists; and of Scotch dissenters, the Free Church and the United Presbyterian Church. The Nonconformists were dissenters from the English Church.

Dissentis (d i s's e n-t i s), a town of Switzerland, canton Grisons, about 3800 ft. above the sea, at the junction of the Middle and Vorder Rhine, with a Benedictine abbey established in 614. Pop. 1400.

Dissociation (dis-sō-shi-ā'sh u n), a chemical term used to express the partial decomposition which takes place when chemical compounds are exposed to a high temperature; as when by the passage of steam through a white-hot platinum tube some of it is decomposed and an explosive mixture of oxygen and hydrogen may be collected. In his writings on dissociation Ste. Claire Deville uses the term in a more extended sense, as denoting the separation of a body into its constituents (whether simple or compound) at a temperature inferior to that at which its composition is usually seen to take place.

Dissolving Views (di-solv'ing) are paintings u p o n glass magnified and thrown with great distinctness upon a screen by means of one or two magic lanterns with strong lenses, and illuminated by the oxyhydrogen light. If one lantern is used the picture is drawn out of focus gradually, and a second substituted, which is brought gradually into focus, thus producing the haze and brilliancy which have gained this sort of exhibition its name. If two lanterns are used, they are placed side by side with their lens tubes slightly convergent, so that the images may be superposed on the screen. By means of a revolving shutter either lantern can be wholly or partially shut off and the image of other lanterns be correspondingly disclosed.

Dissonance (d i s' u-nans), in music, that effect which results from the union of two sounds not in accord with each other. The ancients considered thirds and sixths as dissonances; and, in fact, every chord except the perfect concord is a dissonant chord. The old theories include an infinity of dissonances, but the present received system reduces them to a comparatively small number. The most common are those of the tonic against the second, the fifth against the sixth, or (the most frequent of all) the fourth against the fifth.

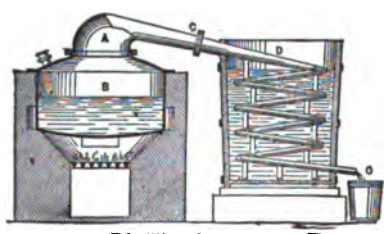
Distaff (dis'taf), the first instrument employed in spinning. It consisted of a staff, on one end of which the wool or flax was rolled. The spinner held it in the left hand, and drew out the fibers with the right, at the same time twisting them. A small piece of wood called a spindle was attached to the thread, the weight of which carried it down as it was formed. When the spindle reached the ground the thread which had been spun was wound round it, and it was then again fastened near the beginning of the new thread.

Distemper (dis-tem'pėr), a disease of the dog commonly considered as of a catarrhal nature. In most cases a running from the nose and eyes is one of the first and chief symptoms, the defluction becoming after some time mucous and purulent. The animal is subject to violent fits of coughing combined with vomiting, loses its appetite, its flesh begins to waste, and if the disease be virulent, symptoms of affection of the brain manifest themselves, accompanied by fits, paralysis, or convulsive twitchings. In the first stage of the disease laxatives, emetics, and occasional bleeding are the principal remedies; diarrhœa should be checked by astringents, and to reduce the violence of the fits warm bathing and antispasmodics should be resorted to. The distemper is generally contagious, and occurs but once in a lifetime.

Distemper (Italian, *tempera*), in painting, a preparation of opaque color mixed in a watery glue, such as size, white of egg, or gum. It is used now chiefly in scene-painting and in paper for walls, but was employed in the higher departments of art before the introduction of oil-painting in the fifteenth century. Distemper is painted on a dry surface, fresco on wet mortar or plaster.

Distich (dis'tik), a couplet of verses, especially one consisting of a Latin or Greek hexameter and pentameter, making complete sense.

Distillation (dis-ti-lā'shun), the volatilization and subsequent condensation of a liquid by a special apparatus, resulting in a separation of the liquid from a mixture. The operation is performed by heating the crude liquid or mixture in a retort or vessel known as the *body of the still*. This is made of various shapes and materials, and is closed with the exception of a slender neck which opens into the condenser, a long tube through which the hot vapor from the still is passed. The tube is kept at a sufficiently low temperature to cause the vapor to condense, the common method of securing this being to surround the tube with a constantly renewed stream of cold water. In some cases ice or a freezing mixture may be required to effect condensation. On a large scale the condensing tube is coiled round and round in a tub or box, and is known as a *worm*. From the end of it the vapor, condensed into a liquid, drops or distils into a receiver. The simplest case of distillation is that of water containing solid matter in solution, the solid matter remaining behind in the still or retort while the water trickles pure into the receiver. The cut which



Distilling Apparatus.

represents a simple form of still, shows B, a copper boiler, the 'body' of the still, A being the 'head,' and C the 'neck,' which communicates with the spiral worm D placed in a vessel which contains cold water, the distilled liquid trickling out at O. The cold water round the worm requires to be continually renewed, as it absorbs the heat. When the mixture to be distilled consists of two or more liquids of different boiling-points, such as alcohol and water, the more volatile comes off first, accompanied by a certain proportion of the vapor of the other, so that it is hardly possible completely to separate bodies by one distillation. This is effected by repeated successive distillations of the liquid with or without the addition of substances to retain the impurities. When the production of one of the ingredients only is aimed at by this process, it is called *rectification*, but when it is desired to separate and collect all the liquids present, or to divide a mixture into portions lying within certain ranges of temperature ascertained either by the thermometer or by the amount of liquor run off, or by the appearance of the distillate, etc., the process is called *fractional distillation*. In the laboratory, distillation is employed for purifying water, for recovering alcohol and ether, and for the preparation, purification, and separation of a great number of bodies. On the large scale distillation is employed in the preparation of potassium, sodium, zinc, mercury; of sulphuric acid, ether, chloroform, sulphide and chloride of carbon, essential oils and perfumes; purification of coal and wood tar, and the products obtained from them; and, most extensive of all, the manufacture of whisky, brandy, or other spirit. Sea-water is also distilled in many cases for drinking or cooking purposes. *Destructive distillation* differs from the preceding in this respect, that the original substance is not merely separated into the bodies by the mixture of which it is formed, but is so acted on that it is completely decomposed, and bodies are produced which had no existence in the original matter. The term is restricted to the action of heat upon complex organic substances out of contact with the air. The products of destructive distillation are numerous and varied. On the manufacturing scale the process is conducted sometimes for one part, sometimes for another part of the products. Coal, for example, is distilled primarily for the gas, but also for ammoniacal water, benzol, anthracene, and sometimes for the sake of the fixed carbon or coke, the volatile portions being neglected and practically wasted. Wood is distilled partly for the sake of the pyroligneous acid and the tar, partly for the charcoal. Bones are distilled for the sake of the charcoal, though the oil is also

collected. Shale is distilled solely for the sake of the oil.

Distoma (dis'to-ma), a genus of trematode or suctorial parasitical worms or flukes, inhabiting various parts in different animals. *D. hepaticum*, or common liver fluke, inhabits the gall-bladder or ducts of the liver in sheep, and is the cause of the disease known as the rot. They have also been discovered in man (though rarely), the horse, the hog, the rabbit, birds, etc. In form it is ovate, flattened, and presents two suckers (whence the name), of which the anterior is perforated by the aperture of the mouth. A branched water-vascular system is present, and opens posteriorly by a small aperture. All the animals of this genus present the phenomenon known as 'alternation of generation.'

Distress (dis-tres'), in law, is the taking of a personal chattel of a wrongdoer or a tenant, in order to obtain satisfaction for the wrong done or for rent or service due. If the party whose goods or cattle are seized disputes the injury, service, duty, or rent, on account of which the distress is taken, he may replevy the things taken, giving bonds, at the same time, to return them or pay damage in case the party making the distress shows that the wrong has been done, or the service or rent is due. Another description of distress is that of *attachment*, to compel a party to appear before a court when summoned for this purpose. The distresses most frequently made are on account of rent and taxes and *damage-feasance*.

Distribution of Animals (dis-tri-bū'-shun). See *Zoology*.

Distribution of Plants. See *Botany*.

District Attorney (dis'trikt), the public prosecutor within a defined district. One is elected in each county in each state, and the Federal government also appoints one for each United States judicial district. The state district attorney prosecutes criminals before the state courts, while the government official prosecutes offences against the Federal government and conducts civil actions in its behalf.

District Courts (dis'trikt), an important series of courts in the United States, each under a single judge, and having original jurisdiction in civil, criminal and admiralty causes, in which the general government or officers of the government are concerned. They are now over one hundred in number. Generally there is one for each State, but the larger States have more than one.

District of Columbia. See *Columbia*.

Districts, Congressional, the divisions in the United States which each return a representative to Congress. Their number varies at different times, being fixed after each decennial census.

Ditch (dich), a trench in the earth made by digging, particularly a trench for draining wet land, or for making a fence to guard enclosures, or for preventing an enemy from approaching a town or fortress. In the latter sense it is called also a *fosse* or moat, and is dug round the rampart or wall between the scarp and counterscarp. See *Fortification*.

Dithyrambus (dith-i-ram'bus), **Dith'yramb**, in Greek literature, a poem sung in honor of the god Bacchus or Dionysus, at his festivals. It was composed in a lofty and often inflated style; hence the term is applied to any poem of an impetuous and irregular character.

Ditmarshes (dit'marsh-es; German, *Dithmarschen*), a district of Holstein, in Germany, consisting of a monotonous flat stretching along the German Ocean, between the mouths of the Elbe and the Eider, and so little raised above the sea as to require the protection of strong embankments. The area is 500 sq. miles, and the total pop. above 70,000.

Dittany (dit'a-ni), the popular name of the plants of the genus *Dictamnus*, an herb of the rue family (Rutaceæ), found in the Mediterranean region. The leaves are pinnate, the large white or rose-colored flowers are in terminal racemes. The whole plant is covered with oily glands, and the secreted oil is so volatile that in hot weather its vapor becomes slightly inflammable. *D. Fraxinella* and *D. albus* are found in gardens. The dittany of the United States is *Cunila Mariana*, a labiate plant. The dittany of Crete is *Origănum Dictamnus*, and the bastard dittany is a species of *Marrubium* (horehound), both labiates.

Diu (dē'ŏ), an island of Hindustan, belonging to the Portuguese, on the northwest coast, off the south extremity of Gujerat, from which it is separated by a very narrow channel. It is 7 miles in length, from E. to W., and 2 miles in greatest breadth from N. to S. On a point on the east end of the island stands the town of Diu. It was formerly the seat of a considerable commerce, but

is now a place of no importance. Pop. of island, 14,614.

Diuretics (dī-ū-ret'iks), medicines intended to increase the secretion and discharge of urine. They either act directly on the kidneys, exciting these organs to increased action; or indirectly by first influencing the circulation. Of the first class are squill, broom, juniper, alcohol, potash, etc.; of the second, digitalis, elaterium, cream of tartar, etc.

Diurna (dī-ur'na), a name sometimes given to the diurnal lepidopterous insects or butterflies.

Divan (di-van'), a Persian word having several significations. It is used in Turkey for the highest council of state, the Turkish ministry; also for a large hall for the reception of visitors. Among several oriental nations this name is given to certain collections of lyric poems by one author. The *divans* of Hafiz and Saadi, the Persian poets, are among the most important. In Western Europe the term is applied to a café, and to a kind of cushioned seat.

Divers (dī'verz), birds remarkable for the habit of diving. The divers (Colymbidæ) are a family of swimming birds (Natatores), characterized by a strong, straight, rather compressed pointed bill about as long as the head; a short and rounded tail; short wings; thin, compressed legs, placed very far back, and the toes completely webbed. They prey upon fish, which they pursue under water, making use partly of their wings, but chiefly of their legs and webbed feet in their subaqueous progression. The leading species are the great northern diver (*Colymbus glaciālis*), the red-throated diver (*C. septentrionālis*), and the black-throated diver (*C. Arcticus*). These birds inhabit the Arctic seas of the New and Old worlds; they are abundant in the Hebrides, Norway, Sweden and Russia. The great northern diver, loon, or ember goose, is about 2¾ feet long, and is of handsome plumage.

Dividend (div'i-dend), literally what is to be divided, a term used in arithmetic and in reference to stocks, etc. In the latter sense it is the interest or profit of stocks divided among, and paid to, the proprietors. It also signifies the payment made to creditors out of the estate of a bankrupt.

Dividers (di-vī'ders), a pair of compasses or similar instrument.

Dividing Engine, a machine for marking the divisions on the scales of scientific, mathematical, or other instruments. Some of these perform work of extraordinary fineness and accuracy.

Divi-divi, LIBI-DIBI, or LIBI-DAVI, the pods of *Cæsalpinia coriaria*, a tree which grows in tropical America, and a member of the family which yields sapan, brazil, and other red woods. The pods are about 1 inch broad and 3 inches long, but are generally bent or curled up. They are highly astringent, containing a large proportion of tannic and gallic acids, for which reason they are used by tanners and dyers.

Divination (div-i-nā'shun), the act of divining; a foretelling future events, or discovering things secret or obscure, by the aid of superior beings, or by other than human means. In ancient times divination was divided into two kinds, *natural* and *artificial*. *Natural* divination was supposed to be effected by a kind of inspiration or divine afflatus; *artificial* divination was effected by certain rites, experiments, or observations, as by sacrifices, observation of entrails and flight of birds, lots, omens, positions of the stars, etc. Among modes of divination were: *axinomancy*, by axes; *belomancy*, by arrows; *bibliomancy*, by the Bible; *oneiromancy*, by dreams; *pyromancy*, by fire, etc.

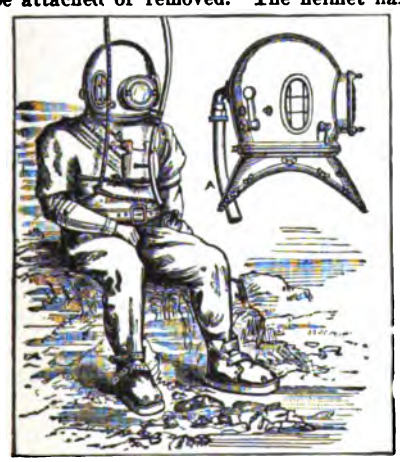
Divine Right (di-vīn'), the claim set up by some sovereigns or their supporters to the absolute obedience of subjects as ruling by appointment of God, insomuch that, although they may themselves submit to restrictions on their authority, yet subjects endeavoring to enforce those restrictions by resistance to their sovereign's acts are considered guilty of a sin. The most recent claim of this character is that made by William II of Germany.

Diving (dīv'ing), the art or act of descending into water to considerable depths, and remaining there for a time. The uses of *diving* are important, particularly in fishing for pearls, corals, sponges, examining the foundations of bridges, recovering valuables from sunken ships, and the like. Without the aid of artificial appliances a skilful diver may remain under water for two, or even three minutes; accounts of longer periods are doubtful or absurd. Various methods have been proposed and engines contrived to render diving more safe and easy. The great object in all these is to furnish the diver with fresh air, without which he must either make but a short stay under water or perish. See *Diving-bell*, *Diving-dress*.

Diving-bell, a contrivance for the purpose of enabling persons to descend and to remain below the

surface of water for a length of time, to perform various operations, such as examining the foundations of bridges, blasting rocks, recovering treasure from sunken vessels, etc. Diving-bells have been made of various forms, more especially in that of a bell or hollow truncated cone, with the smaller end closed, and the larger one, which is placed lowermost, open. The air contained within these vessels prevents them from being filled with water on submersion, so that the diver may descend in them and breathe freely for a long time, provided he can be furnished with a new supply of fresh air when the contained air becomes vitiated by respiration. This is done by means of a flexible tube, through which air is forced into the bell. A form, called the *nautilus*, has been invented which enables the occupants, and not the attendants above, to raise or sink the bell, move it about at pleasure, or raise great weights with it and deposit them in any desired spot.

Diving-dress, a waterproof dress of India rubber cloth used by professional divers, and covering the entire body except the head. The dress has a neck-piece or breastplate, fitted with a segmental screw bayonet joint, to which the head-piece or helmet, the neck of which has a corresponding screw, can be attached or removed. The helmet has



Diving-dress and Diving-helmet by Siebe, Gorman & Co.—*a*, Pipe by which air is supplied; *b*, valve by which it escapes.

usually three eyeholes, covered with strong glass, and protected by guards. Air is supplied by means of a flexible tube which enters the helmet and communicates with an air-pump above. To allow of the escape of the used air there is sometimes another flexible tube, which is led from the back part of the helmet to the surface of the water. But in the more improved forms of the dress, the breathed air escapes by a valve so constructed as to prevent water from getting in, though it lets the air out. Leaden weights are attached to the diver, and his shoes are weighted, that he may be able to descend a ladder, walk about below, etc. Communication can be carried on with those above by means of a cord running between the diver and the attendants; or he may converse with them through a speaking tube or a telephonic apparatus. One form of diving-dress makes the diver independent of any connection with persons above the water. It is elastic and hermetically closed. A reservoir containing highly compressed air is fixed on the diver's back, which supplies him with air by a self-regulating apparatus at a pressure corresponding to his depth. When he wishes to ascend he simply inflates his dress from the reservoir. Another form, known as the Fleuss dress, makes the diver also independent of exterior aid. The helmet contains a supply of compressed oxygen, and the exhaled breath is passed through a filter in the breast-piece which deprives it of its carbonic acid, while the nitrogen goes back into the helmet to be mixed with the oxygen, the supply of which is under the diver's own control, and to be successively breathed. A diver has remained an hour and a half under 35 feet of water in this suit.

A considerable enlargement of the field of deep-sea diving is the result of the invention recently of a form of diving apparatus which is unaffected by the limitations hitherto imposed on work of this kind. A possible depth of 204 feet is recognized by the British Admiralty regulations under the conditions that obtain with the common form of diving suit. Yet this depth has probably never been reached. One hundred feet is the rare descent of the average diver and 150 feet his maximum. With the new apparatus a submergence of 212 feet has been obtained, and this might have been indefinitely extended had there been a greater depth of water at the place where the experiment took place—Long Island Sound during the latter part of 1914.

The new diving apparatus is constructed entirely of metal, is rigid and is made of such materials that it is strong enough to resist the great pressures found in the depths to which it can penetrate. The material used is an alloy of alumi

num, and the diving case weighs complete about 500 pounds. When in the air, the man inclosed in it is incapable of imparting movement to it, but in the water, which counterbalances the dead weight of the apparatus, he can easily move the articulated sections as well as give himself motion through the water. The articulated portion consists of about 50 turning joints, fitted with leather packing, which swells and has an increased effectiveness under increased water pressure. To prevent the pressure-force of the deep sea from jamming the joints, roller bearings are so arranged about them that freedom of action is constantly maintained. The diving case is not absolutely water-tight, nor is it desired that it should be so, as the slight leakage acts as a lubricant to the joints, and aids in their movements. The danger arising from the intake of water thus into the diving case is averted by the action of an ingenious pump appliance, which serves two purposes: that of pumping the water out and pumping the air in. The diver in this invention carries his pump with him and has air supplied to him at atmospheric pressure. At the back of the diving case is a recess and in it is installed a compact but powerful pump, which sucks from the feet of the suit all leakage and forces it at once outward. This pump is worked by compressed air, and the air after performing its mechanical part of driving the pump, is exhausted into the suit for the diver to breathe and then passes to the surface through the free space in an armored rubber tube, within which are led down to the diver the compressed air pipe for driving the pump, and the electrical connections for telephone and lamp. Thus the diving case receives a thorough ventilation, and it has been found that should the pump fail to work for a number of minutes there would still be enough air remaining in the diving case and the tube space to supply the diver's needs for at least the length of time he is being hauled to the surface. During the experiment in Long Island Sound the pump was stopped for ten minutes, while the diver was at a depth of 100 feet. He suffered no inconvenience, and when the compressor again was started he was lowered to a depth of 212 feet. If such a condition as failure of the pump to work for ten minutes had arisen during a descent in the old elastic diving dress the result must necessarily have been fatal. Nor is a delay necessary in hoisting the diver clad in the new diving apparatus to the surface. According to the British Admiralty regulations, should a diver go down to a depth of 204 feet, the time of his ascent must be not less than one hour and a half. In the Long Island Sound experiments the diver was hoisted to the surface in 87 seconds. He was totally unaffected by the abrupt change in pressure, although the deepest he had ever been was 90 feet, and on that occasion he had suffered from bleeding at the nose and ears.

Divining Rod (di-vīn'ing), a wand or twig of hazel or willow used especially for discovering metallic deposits or water beneath the earth's surface. It is described by G. Agricola (*De re metallica*, 1546). It has also a modern interest, which is set forth by Prof. W. F. Barrett, F.R.S., the chief modern investigator. The use of the divining rod at the present day is almost wholly confined to water finding, and in the hands of certain persons it undoubtedly has produced results along this line that are remarkable, to say the least. The professional water-finder provides himself with a forked twig, of hazel, for instance, which twig, held in balanced equilibrium in his hands, moves with a sudden and often violent motion, giving to the onlooker the impression of life within the twig itself. This apparent vitality of the twig is the means whereby the water-finder is led to the place where he claims underground water to exist, though its presence at that particular spot was hitherto wholly unsuspected. While failure is sometimes the outcome of the water-finder's attempts, success as often, and, indeed, according to the testimony of Professor Barrett, more often crowns his efforts. Various explanations, scientific and other, of the phenomenon have been advanced. Professor Barrett ascribes it to 'motor-automatism' on the part of the manipulator of the divining rod, that is, a reflex action excited by some stimulus upon his mind, which may be either a subconscious suggestion or an actual impression. He asserts that the function of the forked twig in the hands of the water-finder may be to act as an indicator of some material or other mental disturbance within him. While a hazel or willow twig seems to be preferred by the professional water-finder, twigs from the beech, holly or any other tree are employed; sometimes even a piece of wire or watch spring is used, with apparently as good results.

Divisibility (di-vis-i-bil'i-ti), that general property of bodies by which their parts or component particles are capable of separation. Numerous examples of the division of matter to a degree almost exceeding be-

lief may be easily instanced. Thus, glass test-plates for microscopes have been ruled so fine as to have 225,000 spaces to the inch. Cotton yarn has been spun so fine that one pound of it extended upwards of 1000 miles, and a Manchester spinner is said to have attained such a marvelous fineness that one pound would extend 4770 miles. One grain of gold has been beaten out to a surface of 52 square inches, and leaves have been made 367,500 of which would go to make an inch of thickness. Iron has been reduced to wonderfully thin sheets. Fine tissue paper is about the 1200th part of an inch in thickness, but sheets of iron have been rolled much thinner than this, and as fine as one 4800th part of an inch in thickness. Wires of platinum have been drawn out so fine as to be only the 30,000th part of an inch in diameter. Human hair varies in thickness from the 250th to the 600th part of an inch. The fiber of the coarsest wool is about the 500th part of an inch in diameter, and that of the finest only the 1500th part. The silk fiber, as spun by the worm, is about the 5000th part of an inch thick; but a spider's fiber is only the 30,000th part of an inch in diameter; insomuch that a single pound of this attenuated substance might be sufficient to encompass our globe. The trituration and levigation of powders, and the perennial abrasion and waste of the surface of solid bodies, occasion a disintegration of particles almost exceeding the powers of computation. The solutions of certain saline bodies, and of other colored substances, also exhibit a prodigious subdivision of matter. A single grain of the sulphate of copper, or blue vitriol, will communicate a fine azure tint to five gallons of water. In this case the sulphate must be attenuated at least 10,000,000 times. Odors are capable of a much wider diffusion. A single grain of musk has been known to perfume a large room for the space of twenty years. At the lowest computation the musk had been subdivided into 320 quadrillions of particles, each of them capable of affecting the olfactory organs. All this goes to demonstrate the extraordinary minuteness of the constituent particles of matter.

Division (di-vizh'un), in arithmetic, the dividing of a number or quantity into any parts assigned; one of the four fundamental rules, the object of which is to find how often one number is contained in another. The number to be divided is the *dividend*, the number which divides is the *divisor*, and the result of the division is the *quotient*. Division is the converse of multiplication.

Division, in military matters, a portion of an army consisting of two or more brigades, composed of the various arms of the service, and commanded by a general officer. In the navy, a select number of ships in fleet or squadron of men-of-war. The term has been practically abolished since the introduction of gigantic heavily-armed ironclad ships into the navy.

Division, in parliament or congress, the mode of determining a question at the end of a debate. The speaker puts the question, and declares whether in his opinion the 'Ayes' or the 'Noes' have it. Should his opinion not be acquiesced in by the minority, the house is cleared, and the 'Ayes' directed to go into the right lobby and the 'Noes' into the left, where they are counted by two tellers appointed for each party.

Division of Labor, a principle employed in great industries for the simplification of the work to be done by each of the workmen engaged in it. The separation of complicated processes into a series of simple operations not only results in a great saving of time, but also demands much less ability on the part of the workman, in order that he may acquire the necessary skill in performing any particular operation. Owing to both of these causes, the saving of time, and the employment of cheaper labor, the cost of producing complicated articles is, by the application of this principle, immensely reduced. Division of labor tends to the invention of machinery, and to the effectual use of machinery when invented. It increases the skill and dexterity of the individual workman; it effects a great saving of time and capital, and it conduces to the more economical distribution of labor by classing work-people according to their capacity. It has, however, a deteriorating effect on the laborer's usefulness as an all-round workman.

Divorce (di-vōrs') is a separation, by law, of husband and wife, and is either a divorce *a vinculo matrimonii*, that is, a complete dissolution of the marriage bonds, or a divorce *a mensâ et thoro* (from bed and board), whereby the parties are legally separated, but not unmarried. The causes admitted by different codes of laws as grounds for the modification or entire dissolution of the marriage contract, as well as the description of tribunal which has jurisdiction of the proceedings, and the form of the proceedings, are various. Divorce was permitted by the law of Moses, but

forbidden in the New Testament, except for unchastity. The early laws of Rome permitted the husband to divorce his wife for adultery and many other alleged offenses. The facility of divorce continued, without restriction, under the Roman emperors, but as the modern nations of Europe emerged from the ruins of the Roman Empire, they adopted the doctrine of the New Testament. Marriage, in the Roman Catholic Church, besides being a civil contract, was considered a sacrament of the church, which it was unlawful to dissolve. The ecclesiastical courts could indeed annul a marriage, but only for a cause that existed at the time the marriage was contracted, such as prior contracts, impotency, etc. For any cause arising after marriage they could only pronounce a divorce *a mensâ et thoro*, which did not leave either party free to marry again, this being only a separation. A divorce *a vinculo matrimonii*, for any cause arising subsequent to marriage, could formerly be obtained in England only by an act of parliament, and the ecclesiastical courts must have previously pronounced a divorce *a mensâ et thoro*. According to present English practice, the husband may obtain a divorce for simple adultery; but if the wife be the petitioner, she must show that her husband has been guilty of certain kinds of adultery, or of adultery combined with desertion or gross cruelty. In Scotland, from the time of the Reformation, divorce might be obtained by either party on the ground of adultery, marriage being held to be only a civil contract, and as such under the jurisdiction of the civil courts. In the United States marriage is considered to be a civil contract, and the laws as to divorce and the facility or difficulty of obtaining it, differ greatly in the several states. Thus, formerly in South Carolina divorce was not granted for any cause. At present in most of the states, divorce is allowed for adultery, habitual drunkenness, desertion for a specified period, etc. In some states the matter is left wholly or partly to the discretion of the courts. Difficult legal questions have arisen from the granting of divorces in one state for reasons not sufficient in another, and the desirability of having Federal enactments making the practice uniform has been much debated.

Dix (diks), DOROTHEA L., an American philanthropist, born in Worcester, Massachusetts. She became deeply interested in the condition of criminals, lunatics and paupers, and visited almost every state in the Union in her efforts to relieve the unfortunate. Her exertions had much to do with the establishment of lunatic asylums in Pennsylvania, New York, North Carolina and several other states; and by unceasing efforts she succeeded in 1854 in having a bill passed by Congress appropriating 10,000,000 acres of the public lands as an endowment for such asylums. This bill was vetoed by President Pierce. Besides tracts for prisoners, etc., she published several anonymous works: *The Garland of Flora*, *Evening Hours*, etc. She died in 1887.

Dix, JOHN A., statesman, was born in Boscawen, New Hampshire, in 1798. He received a military training, but afterwards studied law. At a critical time in 1861 he was appointed Secretary of the Treasury. In the Civil war under the first call for troops he organized seventeen regiments. After the defeat at Bull Run, by his energetic measures, he saved Maryland from going over to the Confederate cause. In 1872 he was elected governor of New York. He was a man of culture and a distinguished orator. He died in 1879.

Dixon (diks'on), THOMAS (1864-), an American novelist and playwright, born at Shelly, North Carolina, graduated from Wake Forest College in 1883. He was for a time pastor of a Baptist church. Among his works are *The Leopard's Spots*, *The One Woman*, *The Clansman*, *The Sins of the Father*, etc.

Dixon, WILLIAM HEPWORTH (1821-79), an English editor and author, born in Manchester. In 1849 he published a memoir of Howard, the philanthropist, which was followed by the *Life of William Penn*, and a work on Admiral Blake. In 1853 he became chief editor of the *Athenæum*, a post which he retained till 1869. His writings include *Free Russia*, *Lord Byron*, *The Holy Land*, *New America*, *Her Majesty's Tower*, etc.

Dixon, a city, county seat of Lee Co., Illinois, on Rock River, 98 miles w. of Chicago. It has cereal mills, and manufactures of condensed milk, Portland cement, shoes, caskets, lawn mowers, wire screens, wagons, corsets, etc. Pop. (1920) 8191.

Dizful (dēz-fōl'), a town of Persia, near the western boundary, on the river Dizful; a place of great trade and manufactures. Pop. 25,000.

Dizier (diz-i-ā), ST., a town of Northeastern France, dep. Haute-Marne, on the Marne where it becomes navigable, 35 miles southeast of Châlons. There are several blast-furnaces and other works. Pop. 14,660.

Djidda. See *Jiddah.*

Djokdjokarta (jo̅k-yo-kär'tä), a Dutch residency in the island of Java, on the south coast, with a capital of the same name. Its forests abound in teak. Its natural fertility is great, and rice, coffee and tobacco are extensively cultivated. It is ruled by a sultan who is dependent on the Dutch. Pop. 850,000. The town is large and regular, and the seat of the Dutch resident, which is a fort commanding both the palace and the town. Pop. 58,300.

Dmitrof (dmē-trof'), a town of Russia, in the government and 45 miles north of Moscow. It has manufactures of cloths, leather and porcelain. Pop. 4550.

Dmitrovsk (dmē-troisk'), a town in Russia, in the government of Orel, on the highway from Moscow to Kiev. There are manufactures of leather and soap. Pop. 5259.

Dnieper (nē-pėr; Russian, *Dnjepr*, dnyepr; anciently *borysthē-nēs*), a great river of Russia which rises in the government of Smolensk, flows first southwest, then southeast, and again southwest to the Black Sea. It begins to be navigable a little above Smolensk, and has a total length, including windings, of 1230 miles. Among its tributaries are the Beresina, the Pripet, the Desna and the Psiol. In its lower course there are important fisheries. Between Kiev and Alexandrovsk it forms a series of cataracts, which are now being removed by blasting of the rocks. Since 1838 there have been steamboats on the river, and the trade carried by it is considerable.

Dniester (nēs'tėr; Russian, *Dnjestr;* anciently *tyras*), a large river of Europe, which has its source in the Carpathian Mountains, in Austrian Galicia, enters Russia at Chotin, and empties itself into the Black Sea, after a course of about 750 miles. Its navigation is difficult on account of frequent shallows and rapids.

Doab (dō-ab; that is, *Two Waters*), a name in Hindustan applied indiscriminately to any tract of country between two rivers. The tract between the Ganges and the Jumna is usually called *the* Doab; other similar tracts have their distinctive names, the Punjab being divided into five districts of this kind, Bari-Doab, Rechna Doab, Sinde-Sagar Doab, etc.

Dobberan (dod'e-ran), or DOBERAN, a German watering place in Mecklenburg-Schwerin, 2 or 3 miles from the Baltic. There are mineral springs, bathing establishments, etc. Pop. 5000.

Dobell (dō-bel'), SYDNEY, an English poet and man of letters, born in 1824. His first poem, *The Roman*, appeared in 1850, and was favorably received by the critics. Among his other works are *Balder*, *Sonnets on the War*, *England in Time of War*, etc. He died in 1874.

Döbeln (deu'beln), a town of the kingdom of Saxony, about 40 miles southeast of Leipzig, with a great trade in grain and manufactures of cloth, yarn, leather, lacquered wares, etc. Pop. (1905) 18,907.

Doberan. See *Dobberan.*

Dobereiner's Lamp (dō'be-rī-nėr), a contrivance for producing an instantaneous light, invented by Professor *Dobereiner*, of Jena, in 1824. The light is produced by throwing a jet of hydrogen gas upon recently prepared spongy platinum, when the metal instantly becomes red hot, and then sets fire to the gas. The action depends upon the readiness with which spongy platinum absorbs gases, more especially oxygen gas. The hydrogen is brought into such close contact with oxygen (derived from the atmosphere) in the pores of the platinum that chemical union, attended with evolution of light, takes place.

Dobrudja (dō-brud'ja), THE, a territory forming part of the kingdom of Roumania, included between the Danube, which forms its boundary on the west and north, the Black Sea on the east, and on the south a line stretching from Silistria to a point a few miles south of Mangalia. There are some fertile spots, but on the whole it is marshy and unhealthy. The population is of various nationalities, Roumanians, Bulgars, Greeks, Turks and Jews. The inhabitants support themselves by rearing sheep and buffaloes. The principal town is Badadagh. Pop. 267,808.

Dobson (dob'sun), HENRY AUSTIN, an English poet, born at Plymouth in 1840. He published *Vignettes in Rhyme*, *Old World Idylls*, and many other volumes of poems, chiefly graceful lyrics, often in French form. He also wrote lives of Fielding, Steele, Goldsmith, etc. He died September 2, 1921.

Docetæ (do-sē'tē; from Greek *dokein*, to seem or appear), the name given, in the earlier ages of the church, to those who denied the reality of the human form of Christ, maintaining it to be merely a phantom or shadow. In the sense of regarding Christ's body as

a heavenly and ethereal, instead of a human one, docetism had its partisans even among the orthodox.

Dock (dok), a name applied to different plants of the genus *Rumex*, belonging to the rhubarb family (Polygonaceæ). These are large herbaceous plants, with stout roots, alternate and often entire leaves, and bearing panicles of small, greenish flowers. They are very troublesome as weeds, but the roots of some of them are used medicinally as astringents.

Docket, DOCQUET (dok'et), in law, a term variously used, as for a summary of a larger writing; a small piece of paper or parchment containing the heads of a writing; an alphabetical list of cases in a court, or a catalogue of the names of the parties who have suits depending in a court.

Docks, are usually artificial enclosures for the reception of vessels, and provided with gates to keep in or shut out the tide. They are called *wet-docks* when they are intended to receive vessels for loading and unloading, the gates being in this case constructed so as to keep in the tide, and thus preserve the water within the docks as nearly as possible at the uniform level of high water. They are called *dry-docks*, or *graving-docks*, when they are intended to admit vessels to be examined and repaired, the gates in this case being such as to keep out the tide while the shipwrights are engaged on the vessel. There is another kind of dry-docks called *floating-docks*, which float on the surface of the water, and may be sunk sufficiently to allow of a vessel being floated into them, and then raised again, by pumping the water out of the tanks round the sides. One of the chief uses of a wet-dock is to keep a uniform level of water, so that the business of loading and unloading ships can be carried on without any interruption and without danger of damage to the vessel from straining, low tides, storms, etc. The first wet-docks constructed in England were those now called the Commercial Docks, in London, which existed in a much less extensive form so early as 1600. In 1800 the West India Docks were constructed, and were followed by the East India Docks, Millwall Docks, London Docks, the St. Katharine Docks and the Victoria Docks, affording, together with those at Tilbury, more than 600 acres of water accommodation, besides wharf and warehouse grounds, where all kinds of appliances and machinery for the speedy and convenient transfer of goods and cargoes are in use. Some of the warehouses are extremely capacious, the tobacco warehouse of the London Docks being itself nearly 5 acres in extent. Next after the London docks come those of Liverpool, which extend more than 6 miles along the north bank of the Mersey, and cover, together with the Birkenhead docks, nearly as large a total acreage as those of London. There are important docks also in the maritime cities of France and other countries of Europe, where the height of the tides renders such constructions necessary.

Graving-docks are built of strong masonry, and their entrance is closed either by swinging gates opening in the middle, and when shut presenting a salient angle to the water in the river or harbor from which the dock is entered, or by a framework called a *caisson*, built like the hull of a ship, with a keel and a stem at both ends. When the caisson is empty it floats, and may be removed to admit of a vessel being floated into the dock. The caisson being then placed at the entrance and filled with water, again sinks into the grooves intended for it and closes the graving-dock. The water is then pumped out, leaving the ship dry and supported by wooden blocks and props. With regard to floating-docks, a common type of construction is the iron floating-dock built in watertight compartments, and not closed in at either end. It is sunk to the required depth by the admission of water into so many of the compartments, till the vessel to be docked can float easily above its bottom, and is then raised by pumping out the water until the ship can be propped up as in a dry-dock.

A kind of dry-dock, called the *hydraulic lift dock*, consists of a double row of iron columns, each of which contains a hydraulic press. All these hydraulic presses can be worked simultaneously by a powerful steam engine, and their combined action has the effect of raising a series of transverse iron girders stretching from the columns on one side to those of the other. An iron pontoon is first floated above these girders, and then sunk so as to rest on them, and the ship to be docked is floated above the pontoon and supported by blocks resting only upon the pontoon, so that the ship is in no way connected with the columns on each side. The hydraulic presses are then set to work, the girders with the pontoon and ship are raised high enough for the water to be run out of the pontoon, which is then sufficiently buoyant to float the ship. The pontoon may now be floated away clear of the dock, and another take its place. By this

plan a number of vessels can be floated for overhauling and repairs in very shallow water and at comparatively slight expense. Docks in the United States are not of so much importance to commerce as in England, the rise and fall of the tides being far less. Vessels can be loaded or unloaded without difficulty at the wharves of any of the Atlantic or Gulf ports without aid of docks. There are, however, some very fine docks for convenient handling of merchandise; for instance the Atlantic docks at Brooklyn and large dry-docks connected with the navy yards.

Dockyards, establishments supplied with all sorts of naval stores, materials and conveniences for the construction, repairs and equipment of ships of war. In England the royal dockyards are at Chatham, Sheerness, Portsmouth, Devonport and Pembroke, besides the Deptford and Woolwich storeyards. There are also royal dockyards at Haulbowline in Cork Harbor, at the Cape of Good Hope, Gibraltar, Malta, Halifax, Bermuda, Antigua, Jamaica, Sierra Leone, Trincomalee, Singapore, Hong-Kong, Esquimalt (Vancouver's Island), Fernando Po, Sydney and Shanghai. The dockyards are under the direct control of the Admiralty, with a rear-admiral as superintendent. In the United States, navy yards are located at Boston, Mass.; Bremerton, Wash.; Brooklyn, N. Y.; Charleston, S. C.; Mare Island, Calif.; Philadelphia, Pa.; Portsmouth, N. H.; Portsmouth, Va., and Washington, D. C. The naval operating base is at Hampton Roads, Va.

Doctor (dok'tur), a term literally signifying teacher. In the middle ages, from the twelfth century, it came into use as a title of honor for men of great learning, such as Thomas Aquinas (Doctor Angelicus), Duns Scotus (Doctor Subtilis), etc. It was first made an academical title by the University of Bologna, and emperors and popes soon afterwards assumed the right of granting universities the power of conferring the degree in law. The faculties of theology and medicine were soon included, but for a long time the faculty of arts retained the older title of *Magister*, till the German universities substituted that of Doctor. The title of Doctor is in some cases an honorary degree, and in other cases (as in medicine and science) conferred after examination. The title of D.C.L. (Doctor of Civil Law), for example, at the University of Oxford and at Trinity College, Dublin, is an honorary degree, and so also are those of D. D. (Doctor of Divinity) and LL.D. (Doctor of Laws) at the Scotch universities. The popes and the archbishops of Canterbury exercise the right of conferring the degree of Doctor both in law and divinity. In the United States seats of learning, while usually conferred after examination, it is common to give an honorary degree to persons of distinction, without regard to their educational fitness.

Doctor's Commons, was a college founded for the Doctors of the Civil Law in London, and was at one time the seat of the court of arches, the archdeacon's court, the court of admiralty, etc. The practitioners in these courts were called advocates and proctors. In 1857 an act was passed empowering the college to sell its property and dissolve, and making the privileges of the proctors common to all solicitors.

Doctors of the Church, a name given to four of the Greek Fathers (Athanasius, Basil, Gregory Nazianzen and Chrysostom) and three of the Latin Fathers (Jerome, Augustine and Gregory the Great). The Roman Catholic Church recognizes others 'Doctors,' including, besides those already mentioned, Ambrose, Hilary, Cyril, John Damascene, Chrysologus, Leo, Isidore, Peter Damian, Anselm, Bernard, Thomas Aquinas, Bonaventura, Francis de Sales and Alphonsus de Liguori. The title is posthumous.

Doctrinaires (dok-tri-nārs), a section of French politicians, represented by the Duc de Broglie, Royer-Collard, Guizot and others, who became prominent after the restoration in 1815. They favored a constitutional monarchy with a balance of powers similar to that which then existed in Britain. In the chambers they thus occupied a place between radicals and ultra-royalists. They received the name of *doctrinaires* because they were looked upon more as theoretical constitution-makers than practical politicians, and the term is now used with a wider application to political theorists generally.

Dodder (dod'er), the common name of the plants of the genus *Cuscŭta*, a group of slender, branched, twining, leafless, pink or white, annual parasites. The seeds germinate on the ground, but the young plant shows its parasitic habit by speedily attaching itself to some other plant, from which it derives all its nourishment. They are chiefly natives of temperate climates, and are often very destructive to flax, clover and other crops. There are fifty species in two genera.

Doddridge (dod'rij), PHILIP, an English Dissenting divine, born in London in 1702. He was an earnest pastor, and the author of many hymns, devotional treatises, etc. *The Rise and Progress of Religion in the Soul* and *The Family Expositor* are among the best known works. He died in 1751.

Lesser Dodder (*Cuscûta epithymum*).

Dodecagon (dō-dek'a-gon) a figure enclosed by twelve equal straight lines.

Dodecahedron (dō-dek-a-hē'dron), a regular solid contained under twelve equal and regular pentagons, or having twelve equal bases.

Dodecannese (dō'de-kan-nēz'), The, a name given to a group of islands off the s. w. coast of Asia Minor. Ceded by Turkey to Italy, then to Greece by peace treaty of 1920.

Dodge, MARY ABIGAIL, author, born in Hamilton, Massachusetts, in 1838; died in 1896. Her works, written under the name of Gail Hamilton, are piquant and humorous, including *Country Living and Country Thinking, Gala Days, Battle of the Books, Twelve Miles from a Lemon,* etc.

Dodge City, a city, county seat of Ford Co., Kansas, on the Arkansas River, in a grain and livestock country. The shops of the Santa Fé R. R. are here. Pop. (1920) 5061.

Dodgson, CHARLES LUTWIDGE (1832-98), better known as 'Lewis Carroll,' under which pseudonym he wrote *Alice in Wonderland, Through the Looking Glass* and other charming books. He was born at Warrington, England, and was a clergyman and mathematical lecturer.

Dodo (dō'dō; *Didus ineptus*), an extinct genus of birds once abundant on the island of Mauritius, and assigned by naturalists to the order Columbæ or pigeons, though an extreme modification of the type. It was a massive, clumsy bird, larger than a swan, covered with down instead of feathers, with short, ill-shaped legs; a strong, bulky, hooked beak, and wings and tail so short as to be useless for flight. Its extinction was due to its organization not being adapted to the new conditions, which colonization and cultivation introduced.

Dodo, from painting in the Belvedere, Vienna

Dodona (do-dō'na), a celebrated locality of ancient Greece, in Epirus, where was one of the most ancient Greek oracles. It was a seat of Zeus, whose communications were announced to the priestesses in the rustling of the leaves on its oak tree and the murmuring of water which gushed forth from the earth.

Dodsley (dods'li), ROBERT, an English poet and dramatist, born in 1703; died in 1764. Among his writings was a tragedy, entitled *Cleone*, which had some success on the stage. A selection of *Fables* in prose, with an *Essay on Fables* prefixed, was one of his latest productions. He planned the *Annual Register* (commenced in 1758); the *Collection of Old Plays*, twelve vols. 12mo. which now chiefly sustains his name as a publisher; and the *Collection of Poems by Different Hands*, six vols. 12mo.

Doe, JOHN, and RICHARD ROE, two fictitious personages of the English law whose names were formerly used in a suit of ejectment. This fictitious form of procedure was abolished in 1852.

Doesborgh (dōs'borh), a fortified town of Holland, province of Gelderland, at the junction of the Old and New Yssel. Pop. 4442.

Dog (*Canis vulgāris*), a digitigrade, carnivorous animal, forming the type of the genus *Canis*, which includes also the wolf, the jackal, and, as a subgenus, the fox. The origin of the dog is a much-debated question, some considering the breed derived from the wolf, an opinion which is based on resemblances of structure, the susceptibility which the wolf shows of being domesti-

cated, the fact of the two animals breeding together and producing fertile young, and the equality in the period of gestation. But all these points are subject to exceptions and reservations which make the matter doubtful. It is generally agreed that no trace of the dog is to be found in a primitive state, the dhole of India, and dingo of Australia being believed to be wild descendants from domesticated ancestors. Several attempts to make a systematic classification of the varieties of dogs have been made, but without much success, it being difficult in many cases to determine what are to be regarded as types, and what as merely mongrels and cross-breeds. Colonel Hamilton Smith divides dogs into six groups, as follows:—(1) *Wolf-dogs*, including the Newfoundland, Esquimaux, St. Benard, shepherd's dog, etc.; (2) *Watch-dogs and Cattle-dogs*, including the German boar-hound, the Danish dog, the matin dog, etc.; (3) *Greyhounds*, the lurcher, Irish hound, etc.; (4) *Hounds*, the bloodhound, staghound, foxhound, setter, pointer, spaniel, cocker, poodle, etc.; (5) *Cur-dogs*, including the terrier and its allies; (6) *Mastiffs*, including the different kinds of mastiffs, bulldog, pug-dog, etc. (See the articles under these names.) Dogs have in the upper jaw six incisors, two strong curved canines and six molars on each side, the first three, which are small and have cutting edges, being called false molars in the lower jaw are six incisors, two canines, and on each side seven molars. The forefeet have five toes the hind-feet four or five, the claws are strong, blunt and formed for digging, and are not retractile. The tail is generally long, and is curled upwards. The female has six to ten mammæ; she goes with young nine weeks, as a rule. The young are born blind, their eyes opening in ten to twelve days; their growth ceases at two years of age. The dog commonly lives about ten or twelve years at the most, twenty.

Dogbane (*Apocynum androsæmifolium*), an American plant found from Canada to Carolina, belonging to the nat. order Apocynaceæ (which see). The whole plant is milky; the root is intensely bitter and nauseous, and is employed in America instead of ipecacuanha. Another species (*A. Cannabinum*) yields a useful fiber, and is known as Canada or Indian hemp.

Dog-cabbage. See *Dog's-cabbage*.

Dog-cart, a sort of double-seated gig for four persons, those before and those behind sitting back to back it is often furnished with a boot for holding dogs.

Dog-days, the name applied by the ancients to a period of about forty days, the hottest season of the year, at the time of the heliacal rising of Sirius, the dog-star. The time of the rising is now, owing to the precession of the equinoxes, different from what it was to the ancients (July 1); and the dog-days are now counted from July 3 to August 11, that is, twenty days before and twenty days after the heliacal rising.

Doge (dōj; from Latin *dux*, a leader, later a duke), formerly the title of the first magistrates in the Italian republics of Venice and Genoa. The first doge of Venice elected for life was Paolo Anafesto, in 697 and in Genoa, Simon Boccanera, in 1339. In the former city the dignity was always held for life; in the latter, in later times, only for two years. In both cities the office was abolished by the French in 1797.

Dogfish, a name given to several species of small shark, common around the British Isles. The rough skin of one of the species (*Scyllium catŭlus*), the lesser-spotted dogfish, is used by joiners and other artificers in polishing various substances, particularly wood. This species is rarely 3 feet long. *S. canicŭla*, the greater dogfish, is from

Small-spotted Dogfish (*Scyllium catŭlus*).

3 to 5 feet in length. It is blackish-brown in color, marked with numerous small, dark spots. Both species are very voracious and destructive. Their flesh

Dutch Dogger.

is hard, dry and unpalatable. The common or picked dogfish (*Acanthias vulgāris*) is common in British and N.

American seas, and is sometimes used as food. It is fierce and voracious.

Dogger (dog'er), a Dutch vessel equipped with two masts and somewhat resembling a ketch. It is used particularly in the German Ocean for the cod and herring fisheries.

Dogger-bank, an extensive sand-bank of the German Ocean, celebrated for its cod-fishery. It commences about 36 miles east of Flamborough Head and extends E. N. E. to within 60 miles of Jutland, in some places attaining a breadth of about 60 miles. Here a German naval squadron was put to flight by the British on January 24, 1915.

Dog-grass. Same as *Couch-grass.*

Dog-lichen, the popular name of a plant, *Peltidea canina,* common on damp ground, stones and trunks of trees. It was formerly supposed to be a specific for hydrophobia. Also known as *ash-colored ground liverwort.*

Dogma (dog'ma), an article of religious belief, one of the doctrines of the Christian faith. The history of dogmas, as a branch of theology, exhibits in a historical way the origin and the changes of the various Christian systems of belief, showing what opinions were received by the various sects in different ages of Christianity, the sources of the different creeds, by what arguments they were attacked and supported, what degrees of importance were attached to them in different ages, the circumstances by which they were affected, and the mode in which the dogmas were combined into systems. Lectures on this subject are common in the German universities.

Dogmatics (dog-mat'iks), a systematic arrangement of the articles of Christian faith (dogmas), or the branch of theology that deals with them. (See *Dogma.*) The first attempt to furnish a complete and coherent system of Christian dogmas was made by Origen in the third century.

Dog-parsley, same as fool's parsley.

Dog-rose, the *Rosa canina,* or wild brier, nat. order Rosaceæ. By the Dutch invention of forming standards much use is made of the dog-rose for budding purposes.

Dog's-bane. See *Dogbane* and *Apocynaceæ.*

Dog's-cabbage, Dog-cabbage, *Thelygŏnum cynocrambe,* a smooth, succulent herb, nat. order Chenopodiaceæ, found in the south of Europe. Though it is slightly acrid and purgative, it is sometimes used as a pot-herb.

Dog's-fennel, a British plant found in cultivated fields (*Anthĕmis Cotŭla*), with acrid, emetic properties. It derives its name of dog's-fennel from some resemblance of its leaf to fennel and from its bad smell.

Dog's-mercury, *Mercurĭalis perennis,* nat. order Euphorbiaceæ, an herb common in Britain. It has poisonous properties, and may be made to yield a fugitive blue dye.

Dog's-tail Grass (*Cynosūrus*), a genus of grasses. *Cynosūrus cristātus* is a perennial found wild all over Great Britain in pastures, lawns and parks. Its roots are long and wiry, and descending deep into the ground ensure the herbage against suffering from drought. Its stem is from 1 to 2 feet high and its leaves are slightly hairy.

Dog-star, a name for Sirius, the star that gives their name to the dog-days (which see).

Dog's-tooth Ornament, an architectural ornament or molding consisting of square four-leaved flowers with projecting centers placed in close contact with each other. It is the characteristic decorated molding of Early English architecture.

Dog's-tooth Ornament.

Dog's-tooth Violet, *Erythronium dens-canis,* a liliaceous plant grown in gardens, so called from the appearance of its white bulbs.

Dog-tooth, or Canine Tooth, one of the teeth in the human jaw placed between the foreteeth and the grinders. They are sharp pointed, resembling a dog's teeth.

Dog-tooth Spar, a form of calcic carbonate or calc-spar found in Derbyshire and other parts of England, and named from a supposed resemblance to a dog's tooth.

Dog-watch, a nautical term distinguishing two watches of two hours each (4 to 6 P.M. and 6 to 8 P.M.). All the other watches count four hours each, and without the introduction of the dog-watches, the same hours would always fall to be kept as watch by the same portion of the crew.

Dogwood, a common name of trees of the genus *Cornus,* but specifically applied in Britain to *C. san-*

guinea. It is a common shrub in copses and hedges in England the small, cream-white flowers are borne in dense, round clusters. The wood is used for skewers and for charcoal for gunpowder. The *C. mascŭla* is known as the cornel tree. *Cornus florida* and other American species are also called dogwood. Its leaves turn red before falling and add much to the autumn beauty of American woods. The 'poison dogwood' of America is *Rhus venenāta*, one of the sumachs. See *Cornel, Cornaceæ*.

Doiley (doi'li), a small ornamental napkin used at table to set glasses on at dessert.

Doit, an ancient Scottish coin, of which eight or twelve were equal to a penny sterling. In the Netherlands and Lower Germany there was a coin of similar name and value.

Dolabra (do-lā'bra), the Latin name for a celt. See *Celts*.

Dolbear (dol'bār), AMOS EMERSON, scientist, was born at Norwich, Connecticut, in 1837; died in 1910. He was professor at Kentucky University, 1867-74, and afterward of physics and astronomy in Tuft's College. He made inventions in telegraphy and wrote *Art of Projecting, The Speaking Telephone, Matter, Ether and Motion, Natural Philosophy*, etc.

Dolce (dol'chā), or DOLCEMENTE, in music, an instruction to the performer that the music is to be executed softly and sweetly.

Dolci (dol'chē), CARLO, a celebrated painter of the Florentine school, was born at Florence in 1616, and died there in 1686. His works, principally heads of madonnas, saints, etc., have a character of sweetness and melancholy. Among his chief productions are *St. Cecilia at the Organ* and *Herodias with the Head of John the Baptist*, both in the Dresden Gallery, and *St. Andrew in Prayer*, at the Pitti Gallery.

Dolcinites (dol'chē-nīts), a Christian sect of Piedmont, so named from their leader *Dolcino*. They arose in 1304 as a protest against the Papacy, but were suppressed by the troops of the Inquisition in 1307.

Doldrums (dol'drumz), among seamen, the parts of the ocean near the equator that abound in calms, squalls and light, baffling winds; otherwise known as the horse-latitudes.

Dôle (dōl), a town in France, Jura, 26 miles southeast of Dijon. It is of Roman origin, was long the capital of Franche Comté, and has some interesting antiquities. The manufactures are Prussian blue, hosiery, ironware, leather, etc. Pop. (1906) 11,166.

Dole, SANFORD BALLARD, was born in the Hawaiian Islands, of American parentage, in 1844. He studied law, practiced it in Honolulu, and became a member of the Hawaiian legislature and judge of the supreme court. He was a leader in the reform movement of 1887 and on the formation of a republic in 1893 was made its president. When Hawaii was annexed to the United States he continued in power as governor of the islands, and of the Territory of Hawaii in 1900. He has been an United States district judge in the territory since 1903.

Dolerite (dol'e-rīt), a variety of trap-rock composed of augite and labradorite with some titaniferous magnetic iron ore and other minerals.

Dolgelley (dol-geth'lē), a town of Wales, capital of Merioneth County, near the foot of Cader Idris. It has manufactories of woolens, flannels and cloths. Pop. (1911) 2160.

Dolichocephalic (dol-i-ko-sef'a-lik), long-headed; a term used in ethnology to denote those skulls in which the diameter from side to side is less in proportion to the longitudinal diameter (*i. e.*, from front to back) than 8 to 10.

Dolichos (dol'i-kos), a genus of leguminous plants, suborder Papilionaceæ. They are found in the tropical and temperate regions of Asia, Africa and America, and all produce edible legumes. *D. sesquipedālis*, which is also grown in the south of France, has pods a foot in length and containing seven to ten kidney-shaped seeds. *D. lignōsus* is one of the most common kidney beans in India. *D. tuberōsus* of Martinique has a fleshy, tuberous root which is an article of food.

Dolichosaurus (dol-i-ko-są'rus; 'long lizard'), an extinct snake-like reptile found in the chalk, whose remains indicate a creature of aquatic habits, from 2 to 3 feet in length.

Dollar (dol'ar), a silver or gold coin of the United States, of the value of 100 cents. The same name is also given to coins of the same general weight and value, though differing somewhat in different countries, current in Mexico, a great part of South America, Singapore, the Philippine Islands, etc. The name is from the Dutch (also Danish and Swedish) *daler*, from Ger. *thaler*, so named from Ger. *thal*, a dale, because first coined in Joachim's *Thal*, in Bohemia, in 1518. The sign $, used in

this country to signify a dollar, is supposed to date from the time of the pillar dollar of Spain. This was known as the 'Piece of Eight' (meaning 8 reals), the curve being a partial representation of the figure 8. The two vertical strokes are thought to represent the Pillars of Hercules, which were stamped upon the coin itself.

Dollart (dol'lert), THE, a gulf of the German Ocean, at the mouth of the Ems, between the Dutch province of Groningen and Hanover. It was originally dry land, and was formed by irruptions of the sea, which took place in 1277 and 1530, overwhelming thirty-four large villages and numerous hamlets.

Döllinger (deul'ing-ér), JOHANN JOSEPH IGNAZ, a celebrated German theologian and leader of the Old Catholic party, was born at Bamberg, in Bavaria, in 1799. In 1822 he entered the church, and soon after published *The Doctrine of the Eucharist during the First Three Centuries*, a work which won him the position of lecturer on church history at the University of Munich. In later years he took an active part in the political struggles of the time as representative of the university in the Bavarian parliament, and as delegate at the Diet of Frankfort voted for the total separation of church and state. In 1861 he delivered a course of lectures, in which he attacked the temporal power of the papacy. But it was first at the Œcumenical Council of 1869-70 that Dr. Döllinger became famous over Europe by his opposition to the doctrine of papal infallibility. In consequence of his opposition to the vatican decrees he was excommunicated in 1871 by the Archbishop of Munich. A few months later he was elected rector of the University of Munich, and in 1873 rector of the Royal Academy of Science. Among his numerous works we may notice *Origins of Christianity*, *A Sketch of Luther*, *Christianity and the Church*, etc. He died in 1890.

Dollond (dol'ond), JOHN, an English optician of French descent, born in 1706; died in 1761. He devoted his attention to the improvement of refracting telescopes, and succeeded in constructing object-glasses in which the refrangibility of the rays of light was corrected. Subsequent members of the family have distinguished themselves in optics, astronomy, etc.

Dolman (dol'man), a long robe worn by the Turks as an upper garment. It is open in front, and has narrow sleeves. It has given its name to a kind of loose jacket worn by ladies.

Dolmen (dol'men), a name sometimes used as equivalent to *cromlech*, sometimes in a distinctive sense. Sir John Lubbock maintains that *cromlech* should be applied to a stone circle, *dolmen* to a stone chamber, such circle or chamber consisting of huge stones set up often in prehistoric times for religious or sepulchral purposes or as memorials of some important event. See *Cromlech*.

Dolomieu (dol-o-myeu), DÉODAT GUY SILVAIN TANCRÈDE GRATET DE, a French geologist and mineralogist, born in 1750 at Dolomieu (Isère). After some years of military service he devoted himself to geological researches. He accompanied the French expedition to Egypt, but was shipwrecked on his return off the coast of Taranto, and imprisoned and harshly treated by the Neapolitan government. He died in 1801. Among his works are *Voyages aux Iles de Lipari*, etc., (1783); *Sur le Tremblement de Terre de la Calabre* (1784); *Philosophie minéralogique* (1802).

Dolomite (dol'u-mīt), a mineral, also called magnesian limestone. It is composed of carbonate of calcium and carbonate of magnesium, and varies from gray or yellowish white to yellowish brown. It abounds in the Apennines, Tyrol, Switzerland, Tuscany, North America, England, etc. A variety called *bitterspar*, and sometimes *rhombspar*, is found in crystals having the form of a rhomboid; color grayish, yellowish, or reddish brown, easily scratched with the knife, and semitransparent. A second variety is denominated *pearlspar*, which has crystals of curvilinear faces and a pearly luster.

Dolomite Mountains, DOLOMITE ALPS, a group of European mountains belonging partly to Tyrol, partly to North Italy, having the Piave and Rienz on the east and north; the Adige and Eisack on the west. They are named from the prevalence of the mineral dolomite, and present most interesting and picturesque scenery, the peaks being endlessly varied in form. The highest summit is the Marmolata (10,972 ft.); other peaks are the Sorapiss, the Cimon della Pala, the Langkofel, etc.

Dolphin (dol'fin; *Delphinus*), a cetaceous animal, forming the type of family (Delphinidæ) which includes also the porpoises and narwhal. Dolphins are cosmopolite animals, inhabiting every sea from the equator to

the poles; they are gregarious, and swim with extraordinary velocity. The common dolphin (*D. delphis*) measures from 6 to 10 feet in length, has a long, sharp snout with numerous nearly conical teeth in both jaws; its flesh is coarse, rank and disagreeable, but is used by the Laplanders as food. It lives on fish, mollusca, etc., and often may be seen in numbers

Common Dolphin (*Delphinus Delphis*).

round shoals of herring. The animal has to come to the surface at short intervals to breathe. The blowhole is of a semilunar form, with a kind of valvular apparatus, and opens on the vertex, nearly over the eyes. The structure of the ear renders the sense of hearing very acute, and the animal is observed to be attracted by regular or harmonious sounds. One or two young are produced by the female, who suckles and watches them with great care and anxiety, long after they have acquired considerable size. Compactness and strength are the characteristics of the genus.—The name is also commonly but improperly given to a fish, *Coryphæna hippūris*, a member of the mackerel family, the beauty of whose colors when dying has been much celebrated by poets. They abound within the tropics, are about 4 or 5 feet long, very swift in swimming, and are used as food, though said sometimes to be poisonous.

Dom, a Portuguese title corresponding with the Spanish *Don*.

Domain (do-mān), same as *Demesne* (which see); also applied especially to crown lands or government lands.—*Right of eminent domain*, the dominion of the sovereign power over all the property within the state, by which it is entitled to appropriate any part necessary to the public good, compensation being given.

Dombrowski (d o m-b r ov'skē), JAN HENRYK, a Polish general, distinguished in the wars of Napoleon, was born in 1755. He supported the rising of the Poles under Kosciusko in 1794. In 1796 he entered the service of France, and at the head of a Polish legion rendered signal services in Italy in 1796–1801. He took a distinguished part in the invasion of Russia in 1812, and also in the campaign of 1813. After Napoleon's abdication he returned to Poland and the year following was made a Polish senator by Alexander I. He died in 1818.

Dome (dōm), a vaulted roof of spherical or other curvature, covering a building or part of it, and forming a common feature in Byzantine and also in Renaissance architecture. Cupola is also used as a synonym, or is applied to the interior, dome being applied to the exterior. (See *Cupola*.) Most modern domes are semielliptical in vertical section, and are constructed of timber; but the ancient domes were nearly hemispherical and constructed of stone. Of domes the finest, without any comparison, ancient or modern, is that of the Rotunda or Pantheon at Rome (142½ feet internal diameter and 143 feet internal height),

Section of Dome of San Pietro in Montorio, Rome at end of Fifteenth Century.

erected under Augustus, and still perfect. Among others the most noteworthy are St. Sophia at Constantinople (104 × 201 feet), the cathedral of Santa Maria del Fiore at Florence (139 × 310 feet), St. Peter's at Rome (139 × 330 feet), St. Paul's London (112 × 215 feet), the Hotel des Invalides (80 × 173 feet), and the church of St. Geneviève at Paris (67 × 190 feet). The figures represent the internal diameter and height in English feet. The finest dome in America is that of the Capitol at Washington, built of cast-iron.

Domenichino (d ō-m e n-i-k ē' n ō), *Domenico Zampieri*, an Italian painter of great eminence, of

the Lombard school, born at Bologna in 1581 or 1582. He studied under Annibal Carracci, and afterwards went to Rome, where he became painter to Pope Gregory XV. Among his best works are the *Communion of St. Jerome* in the Vatican Museum, the *History of Apollo*, the *Martyrdom of St. Agnes* and the *Triumph of David*. He died at Naples in 1641.

Domesday Book (or DOOMSDAY), a book containing a survey of all the lands in England, compiled in the reign and by the order of William the Conqueror. The survey was made by commissioners, who collected the information in each district from a sworn jury consisting of sheriffs, lords of manors, presbyters, bailiffs, villeins—all the classes, in short, interested in the matter. The extent, tenure, value and proprietorship of the land in each district, the state of culture, and in some cases the number of tenants, villeins, serfs, etc., were the matters chiefly recorded. The survey was completed within a year. Northumberland, Durham, Cumberland and Westmoreland were not included in the survey, probably for the reason that William's authority was not then (1086) settled in those parts. The Domesday Book consists of two volumes, one folio and one quarto. It has been twice republished, the last time (1861-65), in perfect facsimiles of the original.

Domestic Animals, such as are reared and kept by man, and are to some extent in a tame state; as the dog, cat, ox, sheep, swine, horse, ass, elephant, camel, llama, reindeer, etc.

Domfront (doṇ-frōṇ), a town of France, dep. Orne, picturesquely situated on a steep rock above the Varenne, 35 miles W. N. W. of Alençon. Pop. (1906) 2215.

Domicile (dom'i-sīl), in law, the place where a person has a home or established residence. Domicile is often an important question in determining the efficacy of legal citations, the validity of marriage, the right of succession to property, etc. For some purposes what is called a temporary domicile is sufficient, but in questions of marriage and succession it is the permanent domicile that determines the decision. A permanent domicile may be constituted by birth, by choice, or by operation of the law. To constitute a domicile by choice both actual residence and the intention to make it the permanent home are required. It is a legal principle that the wife takes the domicile of her husband. As a general rule the old domicile, and especially the domicile of origin, continues till a new one has been acquired.

Dominant (dom'i-nant), in music, the fifth tone of the diatonic scale, and which assumes the character of a keynote itself when there is a modulation into the first sharp remove. Thus, G is the dominant of the scale of C, and D the dominant of the scale of G.—*Dominant chord*, in music, that which is formed by grouping three tones, rising gradually by intervals of a third from the dominant or fifth tone of the scale. It occurs almost invariably immediately before the tonic chord which closes the perfect cadence.

Domingo (dō-mēn'gō), SAN, capital of the Dominican Republic (or San Domingo) in the island of Hayti. It lies on the southeast coast at the mouth of the Ozama, and has a commodious port. It is the oldest European city in the New World, having been founded in 1494 by Bartholomew Columbus. Pop. est. 20,000 to 25,000.

Dominic (dom'i-nik), SAINT, the founder of the order of the Dominicans, was born in 1170 at Calahorra, in Old Castile. He early distinguished himself by his zeal for the reform of canonical life and by his success as a missionary among the Mohammedans. His attention having been directed to the Albigenses in the south of France, he organized a mission of preachers against heresy in Languedoc. In 1215 he went to Rome to obtain the sanction of Pope Innocent III to erect the mission into a new order of preaching friars. His request was only partially granted, and it was the succeeding pope, Honorius III, who first recognized the importance of a preaching order, and conferred full privileges on the Dominicans. He also appointed Dominic Master of the Sacred Palace or court preacher to the vatican, an office which is still held by one of the order. Dominic died at Bologna in 1221, and was canonized in 1234 by Pope Gregory IX. St. Dominic is usually considered the founder of the Inquisition, which is supposed to have originated with his mission to the Albigenses; but his claim is denied, on the ground that two Cistercian monks were appointed inquisitors in 1198.

Dominica (dom-i-nē'kà), a British West India island, so named because discovered by Columbus on a Sunday (Sp. *dominica*), a member of the united colony of the Leeward Islands between Martinique and Guadeloupe. It is about 29 miles in length,

north to south, and 12 miles in breadth east to west area, 291 square miles. It is rugged and mountainous, but it contains many fertile valleys and is well watered. The shores are but little indented, and are entirely without harbors; but on the west side there are several good anchorages and bays. The principal exports consist of sugar, molasses, cocoa and lime-juice. The imports and exports amount each to about $250,000 annually. Dominica was ceded by France to Great Britain in 1763. Roseau is the capital. Pop. 28,894, largely negroes and including about 300 descendants of the aboriginal Caribs.

Dominical Letter (do-min'i-kal), in chronology, properly called Sunday letter, one of the seven letters of the alphabet, A B C D E F G, used in almanacs, ephemerides, etc., to mark the first seven days of the year and all consecutive sets of seven days to the end of the year, so that the letter for Sunday will always be the same. If the number of days in the year were divisible by seven without remainder, then the year would constantly begin with the same day of the week; but as it is the year begins and ends on the same day, and therefore the next year will begin on the day following, and on leap years two days following, so that the same series is not repeated till after four times seven, or twenty-eight years.

Dominican Republic (dō-min'i-kan), or SAN DOMINGO, a republic occupying the eastern portion of the island of Hayti; area, about 18,000 square miles. It is fertile and exports mahogany, sugar, tobacco, cocoa, etc., but its resources are as yet but little developed. It formerly belonged to Spain, and is the oldest colonial settlement in America. Its inhabitants are chiefly negroes and mulattoes, and the government is in the hands of the negroes. Capital, San Domingo. Pop. estimated at 500,000. See *Hayti*.

Dominicans (do-min'i-kanz), called also *predicants*, or *preaching friars* (*prædicatores*), derived their name from their founder, St. Dominic. At their origin (1216, at Toulouse) they were governed by the rule of St. Augustine, perpetual silence, poverty and fasting being enjoined upon them; and the principal object of their institution was to preach against heretics. Their distinctive dress consists of a white habit and scapular with a large black mantle, and hence they have been commonly known as *Black Friars*. They were almost from the first a mendicant order. They spread rapidly not only in Europe, but in Asia, Africa and America. In England there were fifty-eight Dominican houses at the dissolution of the monasteries, and the Blackfriars locality in London took its name from one of their establishments. They produced some famous scholars, such as Albertus Magnus and Thomas Aquinas, and became formidable as managers of the Inquisition, which was committed exclusively to

Dominican or Black Friar.

them in Spain, Portugal and Italy. In 1425 they obtained permission to receive donations, and ceased to belong to the mendicant orders, paying more attention to polemics and theological science. With the Franciscans, their great rivals, they divided the honor of ruling in church and state till the sixteenth century, when the Jesuits gradually superseded them in the schools and courts. They obtained new importance in 1620 by being appointed to the censorship of books for the church. Among notable Dominicans we may mention Savonarola, Las Casas and Lacordaire. There are establishments of the Dominicans in England, Ireland and the United States.

Dominium (dō-min'i-um), a term in the Roman law used to signify full ownership of a thing.

Domino (dom'i-no), formerly a dress worn by priests in the winter, which, reaching no lower than the shoulders, served to protect the face and head from the weather. At present it is a masquerade dress worn by gentlemen and ladies, consisting of a long silk mantle with wide sleeves and a masking hood. The name is also given to a half-mask formerly worn on the face by ladies when traveling or at masquerades.

Dominoes, a game played with small, flat, rectangular pieces of ivory, about twice as long as they are broad. They are marked with spots varying in number. When one player leads by laying down a domino, the next must follow by placing alongside of it another which has the same number of spots on one of its sides. Thus, if the first player lays down 6-4, the second may reply with 4-2, or 6-3, etc.; in the former case he must turn in the 4, placing it beside the 4 of the first domino, so that the numbers remaining out will be 6-2; in the latter case he must turn in the 6 to the 6 in like manner, leaving 4-3, to which his opponent must now respond. The player who cannot follow suit loses his turn, and the object of the game is to get rid of all the dominoes in hand, or to hold fewer spots than your opponent when the game is exhausted by neither being able to play.

Domitian (do-mish'e-an) or in full TITUS FLAVIUS DOMITIANUS AUGUSTUS, Roman emperor, son of Vespasian, and brother of Titus, was born in A.D. 51, and in 81 succeeded to the throne. At first he ruled with a show of moderation and justice, but soon returned to the cruelty and excesses for which his youth had been notorious. He was as vain as he was cruel, and after

Domitian.

an ineffective expedition against the Catti, carried a multitude of his slaves, dressed like Germans, in triumph to the city. He executed great numbers of the chief citizens, and assumed the titles of Lord and God. He established the most stringent laws against high treason, which enabled almost anything to be construed into this crime. At length a conspiracy, in which his wife Domitia took part, was formed against him, and he was assassinated in his bedroom, in A.D. 96.

Domo (dō'mō), or DOMO D'OSSOLA, a town of North Italy, province of Novara, in the center of a plain on the great Simplon road. Pop. about 3000.

Domremy la Pucelle (dōn-rē-mi là pū-sāl), the birthplace of Joan of Arc, a small French village, department of the Vosges, seven miles N. of Neufchâteau. The house is still shown there in which the heroine was born, and in the neighborhood is the monument erected to her memory.

Don, or DOONE (dō'na; ancient *Tanais*), a river of Russia, which issues from Lake Ivan-Ozero, in the government of Tula; and flows S. E. to within 37 miles of the Volga, where it turns abruptly S. W. for 236 miles, and falls into the Sea of Azof; whole course nearly 1300 miles. The chief tributaries are: right bank, the Donetz and Voronej; left, the Khoper and Manitsch. Although not admitting vessels of much draught, the Don carries a large traffic, especially during the spring floods, and a canal connects it with the Volga system of navigation. It has also very extensive and productive fisheries.

Don (don), a river of Scotland, County Aberdeen, rising near the Banffshire border. It flows tortuously E. through the whole breadth of Aberdeenshire, and falls into the North Sea a little to the north of Aberdeen, after a total course of 82 miles. Its salmon fisheries are of considerable value.—Also, a river of Yorkshire, England, which rises near Cheshire, and joins the Ouse after a course of about 70 miles. It is navigable for small craft to Sheffield.

Don (Latin, *dominus*, a lord or master), a Spanish title of honor, originally given only to the highest nobility, afterwards to all the nobles, and finally used indiscriminately as a title of courtesy. It corresponds with the Portuguese Dom. During the Spanish occupation it was introduced and became naturalized in some parts of Italy, and was particularly applied to the priests.

Donaldson (don'ald-sun), JOHN WILLIAM, an English scholar, born in London in 1811. He studied at London University and at Trinity College, Cambridge, where he was elected a fellow. His first work was *The Theater of the Greeks*, a work showing much erudition. In 1839 he published *The New Cratylus*, which was among the earliest attempts to bring the philological literature of the continent within the reach of the English student. In 1844 appeared the first edition of *Varronianus*, a work on Latin similar in

scope to the *Cratylus*. Among his other writings are grammars of the Hebrew, Greek and Latin languages. He died in 1861.

Donatello (don-à-tel'lo, properly *Donato di Betto Bardi*), one of the revivers of the art of sculpture in Italy, was born at Florence between 1382 and 1387. His first great works in marble were statues of St. Peter and St. Mark, in the church of St. Michael in his native town, in an outside niche of which is also his famous statue of St. George. Along with his friend Brunelleschi he made a journey to Rome to study its art treasures. On his return he executed for his patrons, Cosmo and Lorenzo de' Medici, a marble monument to their father and mother, which is of high merit. Statues of St. John, of Judith, David and St. Cecilia are among his leading works. He died at Florence in 1466.

Donatio mortis causa, is a gift of personal property made in prospect of the death of the donor and consummated by that event.

Donati's Comet (dō-na'ti), so called from the Italian astronomer Donati, who first observed it in June, 1858. Next to the comet of 1811 it is the most brilliant that appeared during the century. It was nearest the earth on October 10, 1858.

Donatists (don'a-tists), one of a body of African schismatics of the fourth century, so named from their founder Donatus, Bishop of Casa Nigra in Numidia, who taught that though Christ was of the same substance with the Father, yet that he was less than the Father; that the Catholic Church was not infallible, but had erred in his time and become practically extinct, and that he was to be the restorer of it. All joining the sect required to be rebaptized, baptism by the impure church being invalid.

Donatus (do-nā'tus), ÆLIUS, a Roman grammarian and commentator, born in A.D. 333. He was the preceptor of St. Jerome, wrote notes on Virgil and Terence, and a grammar of the Latin language so universally used in the middle ages that 'Donat' became a common term for grammar or primer of instruction.

Donau (don'ou). See *Danube*.

Donaueschingen (dō'nou-esh'ing-en), a town of Baden, Germany, 29 miles east by south of Freiburg. It contains the Prince of Fürstenberg's palace, in the garden of which is a basin of clear sparkling water that is asserted to be the true source of the Danube. Pop. 5000.

Donauwörth (don'ou-veurt), a town of Bavaria, at the confluence of the Wörnitz and Danube. It was formerly a free imperial town, and was stormed by the Swedes under Gustavus Adolphus in the Thirty Years' war, 1632. Pop. 5,000.

Donax (don'aks; *Arundo donax*), a species of grass or reed inhabiting the southern parts of Europe; it grows to a great height and is used for fishing-rods, etc.

Don Benito (don bā-nē'tō), a town of Spain, province of Badajoz. It has manufactures of woolens, and a trade in cattle, grain, etc. Pop. 16,565.

Doncaster (don'kas-ter), a municipal borough and market town of England, West Riding of Yorkshire, on the river Don, well built, with straight, broad streets. The parish church, with its tower 170 feet high, Christ Church, the town hall and the theater are among the chief public buildings. It has manufactures of ropes, canvas, machinery, etc. It has been long celebrated for its annual races, now held in the middle of September. Doncaster was originally a Roman station on the line of the old Roman Watling Street. Pop. (1911) 30,520.

Dondrah Head (don'dra), the southern extremity of the island of Ceylon. It was the site during part of the seventh century of the Singhalese capital, numerous remains of which are still to be found.

Donegal (don'e-gal), a maritime county of Ireland, province of Ulster, bounded N. and W. by the Atlantic Ocean; area, 1876 sq. miles, of which about a fifth is under crops. The coast is indented with numerous bays, the most remarkable being Lough Swilly. It is the most mountainous county in Ireland, but has some fine fertile valleys. Mount Errigal, the loftiest summit, is about 2460 feet high. The streams and lakes are small, but numerous and abounding in fish. The climate is moist, the subsoil chiefly granite, mica slate and limestone, and the principal crops oats, potatoes and flax. Spade husbandry is much employed, and agriculture generally is in a very backward state. The manufactures are limited, and consist chiefly of linen cloth, woolen stockings and worked muslin. The fisheries are extensive and valuable, and form the chief employment of the inhabitants of the coast and islands. Grain, butter

and eggs are exported. The minerals include marble, lead, copper, etc., but are not wrought to advantage. Pop. 173,722.—DONEGAL, the county town, is a small seaport on the bay of the same name, at the mouth of the river Esk. Pop. 1214.

Donetz (do'nets), a Russian river which rises in the government of Kursk, flows south and east, forming the boundary of several governments, and, after a course of 400 miles, joins the Don.

Dongola (don'gō-la), a district of Upper Nubia, extending on both sides of the Nile from about lat. 18° to lat. 20° N. It formerly belonged to Egypt and was the seat of a pasha. but after the evacuation of all the country south of Wady Halfa in 1886, by the Egyptian government, it was left in an unsettled state. Its chief products are dates, cotton, indigo and maize. The population is a mixture of Arabs and indigenous Nubians. Its chief town is Dongola or *El Ordeh*, on the left bank of the Nile. Pop. 10,000.

Doni (dō'ni), a clumsy kind of boat used on the coast of Coromandel and Ceylon; sometimes decked and occasionally furnished with an outrigger. The donis are about 70 feet long, 20 feet broad, and 12 feet deep, have one mast and a lugsail and are navigated in fine weather only.

Donizetti (don-e-zet'tē, or do-nid-zet'-te), GAETANO, an Italian composer, born in 1798, at Bergamo. He studied music at Bologna under the distinguished Abbé Mattei. His first opera, *Enrico di Borgogna*, was represented at Venice in 1818. In 1822 his *Zoraïde di Granata* gained him the honor of being crowned on the Capitol. In 1830 appeared his *Anna Bolena*, which first, along with *Lucrezia Borgia* and *Lucia di Lammermoor*—the latter his masterpiece —acquired for him an European frame. In 1835 Donizetti was appointed professor of counterpoint at the Royal College of Naples, but removed in 1840 to Paris, bringing with him three new operas, *Les Martyrs*, *La Favorita* and *La Fille du Régiment*, of which the last two are among his most popular productions. Of his other operas none except *Linda di Chamouni* (1842) and *Don Pasquale* (1843) achieved any special triumph, though he wrote in all sixty-four operas. He died in 1848.

Donjon (don'jon), the principal tower of a castle, situated in the innermost court or bailey, which the garrison could make the last line of defense. Its lower part was commonly used as a prison. See *Castle*.

Don Juan (Sp. pron. ẖu-an'), the hero of a Spanish legend which seems to have had some historical basis in the history of a member of the noble family of Tenorio at Seville. Ac-

Tower of London, time of Henry VIII.
A, The Donjon.

cording to the legend, Don Juan was a libertine of the most reckless character. An attempt to seduce the daughter of a governor of Seville brought the indignant father and the profligate don into deadly conflict, in which the former was slain. Don Juan afterwards, in a spirit of wild mockery, goes to the grave of the murdered man and invites the statue of him erected there to a revel. To the terror of Don Juan the 'stony guest' actually appears at the table to bear him away to the infernal world. The legend has furnished the subject for many dramas and operas. The most famous of the latter is Mozart's *Don Giovanni*, which has made the story familiar to everybody. Among the former are *Burlador de Sevilla*, by Tellez, *Don Juan ou Le Festin de Pierre*, by Molière, and *The Libertine* by Shadwell. The *Don Juan* of Byron bears no relation to the old story but in name and in the libertine character of the hero.

Donkey (dong'ki), a domesticated ass; so called from *dun*, in relation to its color.

Donkey-engine (dong'ki), a small engine used in various operations where no great power is required. Thus, a donkey-engine is often stationed on the deck of a ship to work a crane for loading and unloading.

Donne (don), JOHN, a celebrated poet and divine, was the son of a merchant of London, in which city he was born in 1573. He studied both at Oxford and Cambridge. In his nineteenth year he abjured the Catholic religion, and became secretary to the Lord-chancellor Ellesmere, but finally lost his

office by a clandestine marriage with his patron's niece. The young couple were in consequence reduced to great distress, till his father-in-law relented so far as to give his daughter a moderate portion. By the desire of King James Donne took orders, and, settling in London, was made preacher of Lincoln's Inn. In 1621 he was appointed Dean of St. Paul's. He was chosen prolocutor to the convocation in 1623-24. He died in 1631, and was interred in St. Paul's. As a poet, and the precursor of Cowley, Donne may be deemed the founder of what Dr. Johnson calls the *metaphysical* class of poets. Abounding in thought, this school generally neglected versification, and that of Dr. Donne was peculiarly harsh and unmusical. His style is quaint and pedantic; but he displays sound learning, deep thinking and originality of manner. Besides the works already mentioned, he wrote *Letters*, *Sermons*, *Essays on Divinity* and other pieces.

Donnelly (don'el-i), IGNATIUS, author; born at Philadelphia, Pennsylvania, in 1831. For many years he resided in Minnesota, several times representing that State in Congress. He wrote *Atlantis*, *Ragnarok* and other works, and claimed to have found a cryptogram in Shakespere's plays which, in substance, transferred their authorship to Francis Bacon. He died in 1901.

Donnybrook (don'i-brŏk), a village of Ireland, now mostly in the parliamentary borough of Dublin. Its famous fair, which seldom passed off without riot and bloodshed, was abolished in 1855.

Donora (do-nō'ra), a borough of Washington Co., Pennsylvania, on the Monongahela River, 35 miles S. of Pittsburgh, in a coal and agricultural district. It has wire, nail and fence mills, etc. Pop. (1910) 8174; (1920) 14,131.

Don Quixote (kwiks'ŏt; Spanish pron., kē-hō'tā), the title of a famous romance by Cervantes. See *Cervantes*.

Doo (dŏ), GEORGE THOMAS, an English engraver, born in 1800; died in 1886. He became early known as an excellent artist, and was appointed historical engraver to William IV, and subsequently to Queen Victoria. He was elected an associate of the Royal Academy in 1856, and next year academician.

Doom Palm (dŏm). See *Doum Palm*.

Doomsday Book (dŏms'day). See *Domesday Book*.

Doomster (dŏm'ster), a name formerly given in Scotland to the public executioner. See *Deemster*.

Doon (dŏn), a river in Ayrshire, Scotland, which, after a course of 30 miles, falls into the Firth of Clyde. It is celebrated in the poems of Burns.

Dor (dor), DORR, the black beetle, *Geotrupes stercorarius*, one of the most common of beetles, of a stout form, less than 1 inch long, black with metallic reflections. It may often be heard droning through the air towards the close of the summer twilight. See *Dung Beetle*.

Dora (dō'ra), the name of two rivers in Northern Italy, both tributaries of the Po. The D. BALTEA rises on the southern slopes of the Mont Blanc group and falls, after a course of about 100 miles, into the Po below Chivasso; the D. RIPARIA, about 75 miles long, rises in the Cottian Alps, and joins the Po below Turin.

Dora D'Istria. See *Ghika, Helena*.

Dorak (dō'rak), a town of Persia, province Khuzistan, 300 miles S. E. of Bagdad. It has a considerable commerce, this being aided by a canal which connects the Dorak with the Karun. Pop. 6000.

Doran (dō'ran), JOHN, an English writer, born in 1807; died in 1878. He began writing when a mere youth, and produced a great number of books, among them being *Lives of the Queens of England of the House of Hanover*, *Monarchs retired from Business*, *History of Court Fools*, *The Princes of Wales*, *Their Majesties' Servants* (a history of the English stage from Betterton to Kean). *A Lady of the Last Century* (Mrs. Montague), *London in Jacobite Times*.

Dorcas Society (dor'kas, from the *Dorcas* mentioned in Acts, ix), an association generally composed of ladies for supplying clothes to the poor. Frequently the members of the society meet at stated times and work in common. Partial payment is generally required from all recipients except the very poor.

Dorchester (dor'ches-ter), a municipal borough of England, chief town of Dorsetshire, 118 miles S. W. of London. There are large cavalry and infantry barracks a little to the west of the town. The trade consists chiefly in agricultural produce. Dorchester was an important Roman station (Durnovaria), and many interesting Roman remains are still to be found in the vicinity. It was a parliamentary borough till

1885, when it was merged in the county. Pop. (1911) 9842.

Dordogne (dor'dōn), a department of France, which includes the greater part of the ancient province of Périgord, and small portions of Limousin, Angoumois and Saintonge. Area, 3560 square miles, of which about a third is fit for the plow. The chief minerals are iron, which is abundant, slate, limestone, marble and other stone. Mining, iron manufacture, etc., are carried on to a considerable extent, and there are a number of vineyards. The climate is mild but somewhat changeable. Pop. (1906) 447,052.—The river DORDOGNE, the principal river of the department, rises on the banks of the Puy-de-Sancy, flows W. S. W. and, after a course of 290 miles, unites with the Garonne in forming the Gironde.

Dordrecht (dor'dreht). See *Dort*.

Doré (dō-rā), PAUL GUSTAVE, a prolific French draftsman and painter, born at Strasbourg, January 6, 1833. He studied at Paris, contributing, when only sixteen years of age, comic sketches to the *Journal pour Rire*. He distinguished himself greatly as an illustrator of books. His illustrations of *Rabelais*, of Perrault's *Tales*, Sue's *Wandering Jew*, Dante's *Divina Commedia*, and Cervantes' *Don Quixote* displayed great fertility of invention, and the fine fantasy of his landscapes and the dramatic effectiveness of his groups acquired for him an European reputation. His illustrations of the Bible, of Ariosto's *Orlando Furioso*, and Milton's *Paradise Lost* are also of high excellence. As a painter he has grandeur of conception and a bold, expressive style. Among his chief works are *Christ leaving the Prætorium*, *Paolo and Francesca di Rimini*, *The Flight into Egypt*, *Mont Blanc*, etc. In later years Doré also won fame as a sculptor. He died in 1883.

Doree (dō're), a fish. See *Dory*.

Dorema (do-rē'ma), a genus of plants, nat. order Umbelliferæ. *D. ammoniăcum*, a Persian species, yields the ammoniacum of commerce, a milky juice that exudes from punctures on the stem and dries in little 'tears.'

Doria (dō're-à), one of the most powerful families of Genoa, became distinguished about the beginning of the twelfth century, and shared with three other leading families, the Fieschi, Grimaldi and Spinola, the early government of the republic. Among the older heroes of this family are OBERTO DORIA, who, in 1284, commanded the Genoese fleet which at Meloria annihilated the power of Pisa; LAMBA DORIA, who, in 1298, defeated the Venetian Dandolo at the naval battle of Curzola; PAGANINO DORIA, who, in the middle of the fourteenth century, distinguished himself by great victories over the Venetians. But the greatest name of the Dorias is that of ANDREA, born at Oneglia in 1466, of a younger branch of the family. After serving some time as a condottiere with the princes of Southern Italy, he was entrusted by the Genoese with the reconstruction of their fleet. Disagreement with the Genoese factions drove him to take service with Francis I of France, in which he highly distinguished himself, and in 1527 he took Genoa in name of the French king. But, being displeased with the projects of Francis for reducing Genoa to a place of secondary importance, he went over to the service of Charles V (1529), carrying with him the whole influence and resources of Genoa. He reëstablished order in Genoa, reorganized the government, and although refusing the title of doge practically controlled its affairs to the end of his life. As imperial admiral he performed many services for Charles, clearing the seas of Moorish pirates and assisting the emperor in his expeditions to Tunis and Algiers. In 1547 his authority was threatened by the conspiracy of Fieschi, and he narrowly escaped assassination in the tumult. He died in 1560.

Dorians (dor'i-anz), one of the four great branches of the Greek nation who migrated from Thessaly southwards, settling for a time in the mountainous district of Doris in Northern Greece and finally in Peloponnesus. Their migration to the latter was said to have taken place in B.C. 1104; and as among their leaders were certain descendants of Hercules (or Heracles), it was known as the return of the Heraclidæ. The Dorians ruled in Sparta with great renown as a strong and warlike people, though less cultivated than the other Greeks in arts and letters. Their laws were severe and rigid, as typified in the codes of the great Doric legislators Minos and Lycurgus. (See *Sparta*.) —The *Doric dialect* was characterized by its broadness and hardness, yet, on account of its venerable and antique style was often used in solemn odes and choruses.

Doric Mood (dor'ik), or DORIC MODE in music, was of a grave and manly character, adapted both to religious services and war.

Dawes (dąz), CHARLES GATES, an American financier, born at Marietta, Ohio, in 1865. He was admitted to the bar in 1886, and practiced in Lincoln, Neb., 1887-94. Later he became interested in the gas business at Evanston, Ill., and elsewhere. He became president of the Central Trust Co. of Illinois, Chicago, in 1902. During the World War he was on the administrative staff of the commander-in-chief of the American Expeditionary Forces in France as chairman of the general purchasing board and general purchasing agent. In 1921 President Harding appointed him director of the budget.

Debs, EUGENE V., American Socialist leader, sentenced to ten years' imprisonment for obstructing the war draft in 1918, was released from the Atlanta Penitentiary on Christmas Day, 1921. Freedom was granted him by President Harding in the form of commutation of his ten-year sentence. Full pardon, which alone carries with it the restoration of citizenship rights, was withheld.

Debts of Nations. On February 3, 1922, the United States Congress passed the Allied Debt bill, authorizing the President to conduct negotiations with the debtor nations, looking to refunding. The Senate amendment was agreed to requiring that the funded obligations mature not later than June 15, 1947, minimum rate of interest to be 4¼ per cent. The debts of the following European nations to the United States in 1921 were: Great Britain, $4,277,000,000; France, $3,047,974,777; Italy, $1,666,260,000; Belgium, $350,428,793; and smaller sums to Russia, Czechoslovakia, Greece, Serbia (Jugo-Slavia), Roumania, and other countries, making a total of approximately ten billions of dollars.

The total debts of the nations are estimated at $382,634,000,000. In 1921 the debt of the United States was $23,738,900,000; Great Britain, $37,910,000,000; France, $50,960,000,000; Italy, $18,650,000,000; Belgium, $4,600,000,000; Poland, $69,000,000; Czechoslovakia, $9,135,000,000; Germany, $71,000,000,000; Austria, $15,834,000,000; Bulgaria, $2,350,000,000; Roumania, $5,270,000,000; Portugal, $1,880,000,000; Spain, $2,335,000,000; British India, $2,310,000,000; Turkey, $2,300,000,000; Canada, $2,345,000,000; Australia, $1,956,000,000; Brazil, $1,000,000,000; Japan, $1,713,000,000; China, $1,886,000,000; Netherlands, $1,072,000,000.

De Wet, GENERAL CHRISTIAN, commander-in-chief of the Boer forces in the war of 1899, died February 3, 1922. Shortly after the outbreak of the World War he headed a rebellion in the Orange Free State and western Transvaal. His son Daniel was killed and General De Wet himself wounded. He was captured and sentenced to six years imprisonment with a fine of $10,000, but was released after serving six months.

Diaz (dē'az), ARMANDO, (1861-), an Italian army officer, born at Naples. During the European war he became commander-in-chief of the Italian armies after the disaster of Caporetto on the Isonzo front in October, 1917, and stemmed the Austro-German tide which had been sweeping down into Italy. Later he rehabilitated the armies and began an offensive in October, 1918, which resulted in the redemption of 'Italia Irredenta' and the surrender of the Austrians. He visited the United States in 1921 and was greeted with great enthusiasm.

Disabled Civilians. The United States government co-operates with the separate States in the vocational rehabilitation and return to remunerative occupation of persons disabled in industry or otherwise. For the promotion of this work an appropriation of $750,000 for the fiscal year ended June 30, 1921, and of $1,000,000 for each of the three succeeding years was provided. These appropriations are to be apportioned to the States on the basis of population, no State to receive less than $5000 as its allotment for any fiscal year. The Federal Board for Vocational Education is the agency charged with the administration of the vocational rehabilitation act. Rehabilitation of disabled persons is a responsibility of the State, and the Federal government does not assume the direction of the work within the States, nor does it undertake to establish direct contact with persons disabled in the States. The service of vocational rehabilitation provided in the act of Congress is purely a States' relation service. Expenditure of Federal money in the States under the act may be approved only on the fulfilment of certain conditions, among which are: that for each dollar of Federal money expended in the State, an equal amount shall be expended by the State; that the State board shall submit to the Federal Board for approval plans for rehabilitation, courses of study, etc.; that the state board shall make an annual report on the work done. 'Person disabled' is construed by the act to mean 'any person who, by reason of a physical defect or infirmity, whether congenital or

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acquired by accident, injury or disease, is or may be expected to be totally or partially incapacitated for remunerative occupation.' 'Rehabilitation' is construed to mean 'rendering a person disabled fit to engage in remunerative occupation.' Up to September 30, 1921, 35 States had accepted the Federal act. Acceptance in other States was pending.

Disabled Soldiers. Rehabilitation work for disabled American soldiers, sailors and marines, which was formerly under the direction of the Federal Board for Vocational Training, was transferred to the United States Veterans' Bureau by the Sweet Act approved August 9, 1921. From the date of initintion of the work to August 15, 1921, the net registration of disabled ex-service men with the Federal Board under the soldier rehabilitation act of 1918 totaled 404,396 men and women. Of these 123.785 were dropped after investigation; 269,940 were found eligible for training. Federal Board training centers were developed throughout the fiscal year representing three administrative types: (1) United States Public Service hospitals; (2) Federal Board schools in cities for nonresident students; (3) Federal Board schools for resident students. In the first group training was provided—therapeutic and pre-vocational—which would enable Federal Board representatives to assist the man to the wise choice of subsequent training and employment objective. In the second group provision was made for the establishment of schools in large centers of population (1) to provide elementary education prior to selection of employment objective before active training was feasible; such men were frequently illiterate, had serious disabilities, and sometimes spoke English only brokenly; (2) to provide try-out courses to discover aptitudes and skills which men might have and which might be developed into a complete occupational training; (3) to provide opportunity for supplementary instruction when men were taking placement training. In the third group: Federal Board schools for resident students: two types of schools were developed—(1) for arrested tuberculous cases; (2) for neuropsychiatric cases. Agricultural trainees were divided into three classes: (1) men who went to war from agricultural institutions and re-entered college upon returning; (2) men with eighth-grade preparation who upon returning were admitted to subcollege or special courses; (3) men whose early educational advantages had been such that they ranged all the way from a condition of illiteracy to seventh or eighth grade preparation; these men were given supplementary assistance, being taught English and arithmetic, and (in the case of foreigners) Americanization. Correspondence courses were also provided in agriculture. Commercial training was also given. Graduated payment of maintenance allowance, effective October 12, 1921, runs from $80 to $150 a month.

Dobson, Austin, the English poet who was spoken of as a possible successor to Alfred Austin as poet laureate, died at Ealing September 2, 1921. He was born in 1840.

Dougherty (dok'er-ti), Dennis J., Cardinal, an American Roman Catholic prelate, born in Pennsylvania in 1865. For some years after graduating from the American college in Rome he taught at St. Charles Seminary in his native State, becoming a bishop in 1903, and archbishop of Philadelphia in 1918. He was elevated to the College of Cardinals in 1921, making the third American representative in the ruling body of the Church, the others being Cardinal Gibbons of Baltimore and Cardinal O'Connell of Boston.

Drug Addicts. The drug addicts in the United States are estimated at over a million. The national expenditure for habit-forming drugs is about $60,000,000, but the economic loss is reckoned at $200,000,000, because at least one-fourth of the addicts are incapacitated for productive employment. Following is the relative opium consumption of four nations during a recent year: Italy, 6000 pounds; France, 17,000 pounds; Germany, 17,000 pounds; United States, 470,000 pounds. The principal habit drugs are opium, cocaine, morphine, diacetyl morphia and heroin. People of normal life have no conception of the derangement caused by the use of drugs, unless it is their mishap to have some association with a drug fiend. The 'hoppy's' supply may cost $10 a day, and he will lie, steal or murder to get a 'shot' of 'dope' or a 'plant' for future use when he has 'a yen on.' It is impossible to remain a moderate user of habit-drugs. As the appetite grows, the dose increases. Early treatment in a place of detention is the drug user's best chance of recovery.

Dublin, capital of the Irish Free State. During the war with Great Britain, preceding the establishment of the Irish Free State, the famous Custom House in Dublin was put to the torch May 25, 1921. It was erected in 1791 at a cost of $5,000,000.

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